EMPOWERED FITNESS: REVIEW AND EVALUATION OF EMPOWERMENT OUTCOMES FOR SEXUAL ASSAULT VICTIMS IN WOMEN’S ONLY FITNESS

By

AMY NOEL COLE

A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

WASHINGTON STATE UNIVERSITY
The Graduate School

DECEMBER 2015

© Copyright AMY NOEL COLE, 2015
All Rights Reserved
To the Faculty of Washington State University:

The members of the Committee appointed to examine the dissertation of AMY NOEL COLE find it satisfactory and recommend that it be accepted.

____________________________________
Sarah Ullrich-French, Ph.D., Chair

____________________________________
Anne Cox, Ph.D.

____________________________________
Faith Lutze, Ph.D.

____________________________________
Clayton Mosher, Ph.D.

____________________________________
Jacqueline van Wormer, Ph.D.
ACKNOWLEDGEMENTS

Several people deserve to be recognized for their support of this project. I would like to first acknowledge Sarah Ullrich-French for providing invaluable feedback and guidance throughout the entire process, as well as for her unwavering mentorship over the last several years. Along with Sarah, I would like to thank Anne Cox, Tammy Crawford, and Simon Ličen for the opportunities to collaborate and learn important and enduring lessons about how to be successful both in academia and “real life.” I’m grateful to you all for your mentorship and kindness. I would also like to thank my committee members for their flexibility and patience with this interdisciplinary adventure. Additionally, I would like to acknowledge the women and men of Pink Gloves Boxing who were all so open and generous with their time and resources. Thank you for validating the importance of this work and welcoming me with open arms. You are all incredible pieces of this project, and I hope your voices are always heard. Finally, this dissertation could not have happened without the support, patience, and love I received from my friends and family. Thank you all for your fierce friendship and enduring love.
EMPOWERED FITNESS: REVIEW AND EVALUATION OF EMPOWERMENT OUTCOMES FOR SEXUAL ASSAULT VICTIMS IN WOMEN’S ONLY FITNESS

Abstract

by Amy Noel Cole, Ph.D.
Washington State University
December 2015

Chair: Sarah Ullrich-French

Empowerment is a complex, multidimensional construct. Its frequent use has led it to be considered a “buzz word” by many; however, the value and importance of empowering marginalized groups such as women and victims of sexual assault remains salient. This multi-manuscript dissertation provides an in-depth review of empowerment research and justification for its measurement in physical activity settings; an evaluation of a community-driven, empowerment-focused group fitness class for women (Pink Gloves Boxing); and an exploration of how participation in that class can empower women who were victims of sexual violence. A mixed methods integrated process and impact evaluation examined the implementation and effectiveness of Pink Gloves Boxing (PGB), which has the stated objective of empowering women. Several constructs (e.g., self-efficacy for exercise, empowerment in exercise, perceptions of autonomy supportive environments, enjoyment, and self-compassion) were used to capture the higher-order nature of empowerment. Data were collected from three different
club locations across the country. Qualitative results indicated that women in PGB felt a strong sense of community and a shared accountability for setting and attaining goals in a class that they find both enjoyable and supportive. There was variability in implementation fidelity and program adaptation across locations. Implementation fidelity negatively predicted participants’ perceptions of instructors’ autonomy supportive behaviors ($\beta = -0.65, p < .01$) and increases in program adaptation were positively related to participants’ enjoyment ($\beta = 0.26, p < .05$).

Finally, Multiple Indicator, Multiple Cause structural equation modeling was used to examine differences in empowerment outcomes among women based on their sexual victimization experience and their participation in either PGB or traditional group fitness classes. Results revealed that women in PGB who had been victimized were more empowered than victims ($\gamma = -0.38, p < .01$) and non-victims ($\gamma = -0.24, p < .05$) in traditional fitness. There were no significant differences based on victimization among those in PGB. Implications for research on empowerment in physical activity settings, program evaluation, and the empowering benefits of physical activity participation for victims of sexual assault are discussed.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
</tbody>
</table>

## CHAPTER

1. INTRODUCTION

2. MANUSCRIPT 1: Women’s Empowerment in Physical Activity Settings: Exploring its Relevance, Measurement, and Implications

3. MANUSCRIPT 2: Integrating Process and Impact Evaluation to Assess Empowerment Outcomes in Women’s Only Group Fitness

4. MANUSCRIPT 3: Exploring Empowerment for Sexual Assault Victims in Women’s Only Group Fitness

5. CONCLUSION

BIBLIOGRAPHY

APPENDIX

A. ADDITIONAL QUALITATIVE RESULTS FROM FOCUS GROUPS AND INTERVIEWS

B. PRE-SURVEY ITEMS

C. POST-SURVEY ITEMS

D. SITE A IMPLEMENTATION CHECKLIST

E. SITE B IMPLEMENTATION CHECKLIST

F. SITE C IMPLEMENTATION CHECKLIST
G. SITE A SUMMARY REPORT .................................................................................. 125
H. SITE B SUMMARY REPORT .............................................................................. 128
I. SITE C SUMMARY REPORT .............................................................................. 131
J. LISREL MIMIC SYNTAX FOR EES ............................................................. 134
K. LISREL MIMIC OUTPUT ................................................................................ 135
LIST OF TABLES

1. MANUSCRIPT 1
   a. Table 1: Summary of Findings from Empowerment in Physical Activity Literature .......................................................... 14

2. MANUSCRIPT 2
   a. Table 1: Descriptive Statistics for Participants in Process Evaluation Focus Groups ................................................................. 43
   b. Table 2: Focus Group and Interview Themes ...................................................................................................................... 44
   c. Table 3: Correlations and Descriptive Statistics for Pre- and Post-Test ............................................................................. 51
   d. Table 4: Bivariate Correlations of Residual Change Scores ................................................................................................. 52
   e. Table 5: Linear Regression of Implementation Scores Predicting Residual Change in Outcome Variables .................. 54

3. MANUSCRIPT 3
   a. Table 1: Descriptive Statistics and Bivariate Correlations for Outcome Variables ........................................................................ 76
   b. Table 2: Frequency of Sexual Victimization Experiences by Groups .................................................................................... 77
LIST OF FIGURES

1. INTRODUCTION
   a. Figure 1: Empowerment Process Model.........................................................2

2. MANUSCRIPT 1
   a. Figure 1: Empowerment Process Model..........................................................10

3. MANUSCRIPT 2
   a. Figure 1: Empowerment Process Model..........................................................27
   b. Figure 2: Pink Gloves Boxing Logic Model.....................................................31

4. MANUSCRIPT 3
   a. Figure 1: Empowerment Process Model..........................................................63
   b. Figure 2: MIMIC Model for Group Differences in Empowerment in Exercise Scale .........................................................78
Dedication

This dissertation is dedicated to my mother.

I would be nowhere without your love and support, Mom.

Thank you.
INTRODUCTION

Interdisciplinary research is a form of research that integrates the theory, perspectives, and methods of multiple disciplines in order to further the understanding of concepts or social problems that exist beyond the scope of a single field (National Science Foundation, 2004; Porter, Roessner, Cohen & Perreault, 2006). Interdisciplinary work is exceptionally valuable in research that involves the oppression and empowerment of women (Allen & Kitch, 1998) and, in the case of empowerment research, an interdisciplinary approach is necessary for addressing the full scope of the complex, multidimensional construct. Thus, this dissertation integrates perspectives from sociology, criminal justice, and sport and exercise sciences to evaluate how Pink Gloves Boxing (PGB), a women’s only group fitness class, can empower women who are victims of sexual violence.

Pink Gloves Boxing is an international program that is governed by a standardized curriculum. Each trainer and member of the program receives a manual that describes the three “Tools of Empowerment” (Community, Achievement, and Fun), as well as the “Ten Core Habits” that are used to guide the Tools of Empowerment. The manual also provides opportunities for participants to write down their goals, as well as specify how they plan on reaching them and why. The program uses a Tier System, which members progress through by learning specific boxing skills and performing different mental challenges and leadership tasks. The focus on goal setting and accountability, alongside the emphasis on creating a supportive and caring community, align with models of empowerment and make PGB a valuable program for exploring how empowerment manifests in physical activity settings.

The first manuscript focuses on existing empowerment research in the physical activity context and includes specific recommendations for improving research in this area. A review of
the various conceptualizations of empowerment in organizational, health, social justice, and community psychology fields reveals that there are many ways to interpret the construct. As a higher order construct, empowerment consists of multiple important components (Peterson, 2014). The Empowerment Process Model (EPM; Cattaneo & Chapman, 2010; Cattaneo & Chapman, 2015; Figure 1) is identified as a comprehensive model that encapsulates all of these components, addresses the gaps in existing empowerment literature, and is a useful starting point for the context-specific measurement of empowerment. Existing research on women’s empowerment in physical activity settings is summarized and several recommendations for future research in this setting are made.

Figure 1. Cattaneo and Colleagues’ (2010; 2015) Empowerment Process Model
Following the review of empowerment measurement in physical activity contexts, the second manuscript applies several of the recommendations to an evaluation of Pink Gloves Boxing. Mixed methods are used in an integrated process and impact evaluation that examines how program implementation influences potential empowerment outcomes. Qualitative data, including focus groups, semi-structured responsive interviews, and traditional and participant observations were collected from three diverse PGB clubs across the country. A convenience sample of PGB participants and traditional group fitness participants was recruited via social media and email to participate in a longitudinal quasi-experimental design. The EPM was used to inform the selection of multiple constructs intended to represent the higher-order latent construct of empowerment (Peterson, 2014). Sexual victimization experience was also measured at the first time point, for use in the final manuscript (Koss, et al., 2007). Qualitative data was used to create an implementation checklist to evaluate program fidelity and adaptation at each location. Implementation and adaptation scores were then used in regression analysis to examine how implementation of the program relates to empowerment outcomes.

Empowerment is often cited as a goal of crisis centers that support victims of sexual violence (Kasturirangan, 2008), so, given the detrimental mental and physical health outcomes of sexual victimization (Campbell & Townsend, 2011), the final manuscript investigated how a supportive community within the physical activity context like PGB can empower victims of sexual violence. Cross-sectional results from the first time point of data collection were used to examine differences in empowerment outcomes among victims and non-victims in both PGB and traditional fitness classes. Multiple indicator, multiple cause (MIMIC; Hancock, 2004) structural equation models were used to examine mean differences in empowerment outcomes among four
groups (i.e., victims in PGB, victims in traditional fitness, and women who had never been
victimized in PGB and in traditional fitness classes).

Cumulatively, these three manuscripts demonstrate the need for measuring empowerment
in a physical activity setting. This project addresses existing gaps in context-specific
empowerment research by providing a clear and theoretically grounded definition of
empowerment and by using rigorous evaluation methods to connect specific elements of PGB
with the process of how empowerment outcomes may be met. Thus, this research has important
implications for the successful evaluation of physical activity programs that aim to empower
participants.
MANUSCRIPT 1: Women’s Empowerment in Physical Activity Settings: Exploring its Relevance, Measurement, and Implications

As a complex and multi-dimensional construct, empowerment is a key focus of research and practice in a variety of settings and populations. Broadly speaking, empowerment refers to the process in which people and communities gain control over their lives (Rappaport, 1987). It is a key construct of interest in a diverse array of fields, including community psychology, education, health research, political science and social justice studies, and organizational management (Hur, 2006); however, its frequent and prevalent use has resulted in definitional ambiguity that makes its operationalization and measurement challenging tasks. The goal of this paper is to briefly review the existing definitional and measurement concerns regarding empowerment and to make recommendations regarding its measurement, specifically for women in the physical activity context.

Defining and Measuring Empowerment

Empowerment is a multidimensional construct that occurs in a variety of contexts (Hur, 2006; Peterson, 2014). For example, many conceptualizations of empowerment exist in organization research, where it is theorized that empowered employees provide an advantage (Matthews, Diaz, & Cole, 2003). In this context, empowerment has been defined as the top-down distribution of power (Spreitzer, 1997); employee control of resources (Maynard, Gilson, & Mathieu, 2012); and as a bottom-up emphasis on employees’ perceptions of their own empowerment through the dimensions of meaning, competence, self-determination, and impact (Spreitzer, 1995, 1997; Thomas & Velthouse, 1990). Spreitzer’s (1995) partial nomological network and instrument measures psychological empowerment at the individual level, though this work has also been extended to teams of employees (Kirkman & Rosen, 1999). In the
medical field, empowerment research focuses on marginalized patients, such as the mentally ill or those with disabilities. It is conceptualized as both an outcome and a process that promotes patient self-determination in treatment (Tengland, 2007), increases in patients’ perceptions of control (Herbert, Gagnon, Rennich, & O’Loughlin, 2009), and the development of patients’ knowledge, competence, and the confidence to speak up for themselves (Gibson, 1995).

Movements for social justice also frame empowerment as a mechanism for increasing the power of the marginalized (Freire, 1970; Friedmann, 1992). Many current conceptualizations of empowerment are rooted in Freire’s (1970) argument for critical consciousness to identify sources of inequality and promote efficacy among oppressed individuals and communities. Empowerment theory in social justice movements emphasizes the need for cultural competence and recognition of the power dynamics inherent in different epistemologies and research practices (Pizarro, 1998). It can be seen as an iterative process by which individuals or groups who are without power create awareness of existing power dynamics, develop the skills and ability for regaining power, act on these skills to gain power without infringing on other individuals’ rights, and facilitate and support the empowerment of others in their group or community (McWhirter, 1991; Freire, 1970).

The majority of empowerment research occurs in community psychology (Hur, 2006), which also grounds empowerment studies in Freire’s (1970) work. Empowerment in this field is deemed an important and foundational construct for theory development (Rappaport, 1987). Empowerment in community psychology is also considered both a process and an outcome that operates on community and individual levels (Peterson, 2014; Hur, 2006). As summarized by Cattaneo and Chapman (2010), empowerment in community psychology has been operationalized in a variety of ways, including as mastery and control over one’s life,
participation in one’s community, increasing the power of the marginalized, and achieving personal goals. In the specific area of health promotion, community empowerment is viewed as a participatory process between individuals, their communities, and health practitioners, intended to improve quality of life (Speer, Jackson, & Peterson, 2001; Laverack, 2004). It is commonly included in prevention research (e.g., Peterson & Reid, 2003) and is the primary driver in empowerment evaluation methods (see Fetterman & Wandersman, 2005).

Many researchers in community psychology use Zimmerman’s (1995) nomological network of psychological empowerment. According to Zimmerman (1995), psychological empowerment occurs at the individual level and consists of three components. The intrapersonal component refers to motivation and beliefs about the self and one’s capacities. The interactional component consists of an awareness of the surrounding environment and potential resources. It also includes awareness of how these resources may or may not be used to achieve a desired goal. Finally, the behavioral component of psychological empowerment refers to the actions individuals take within their environment (Zimmerman, 1995). Zimmerman’s network filled an important gap in empowerment research by providing a framework for measurement and assessment, resulting in the development of many context-specific measures of empowerment (e.g., Speer, et al., 2001; Peterson, Lowe, Hughey, Reid, Zimmerman, & Speer, 2006). The nomological network has also been used to inform qualitative investigations of empowerment (Röger, Rütten, Frahsa, Abu-Omar, & Morgan, 2011).

Though Zimmerman’s network promotes more consistency in measurement, concerns regarding the definitional clarity, precision, and utility of empowerment as a construct still exist (Woodall, Warwick-Booth, & Cross, 2012). Early critiques of empowerment called into question the field’s tendency to over-emphasize personal mastery while failing to consider the importance
of connectedness and relationships (Riger, 1993). More recently, Woodall and colleagues (2012) criticized the use of psychological empowerment in public health research for over-emphasizing individual outcomes. They argue that a neoliberal perspective in empowerment research results in prioritizing the value of individuals over the community, which changes its meaning. In this context, empowerment is no longer rooted in community engagement and critical consciousness, fails to consider power relations, and “does little to influence social change” (Woodall, et al., 2012, p. 743).

Christens (2013) provided important clarification in response to this critique, arguing that individual empowerment and psychological empowerment are not synonymous. He contends that psychological empowerment is multilevel and considers the importance of context, arguing that Zimmerman’s theory of psychological empowerment is inextricably linked to community empowerment processes. In addition to clarifying the distinction between psychological and individual empowerment, Christens and colleagues (2013) specify cognitive and emotional components of psychological empowerment. While the emotional component (i.e., individual self-perceptions) is more frequently measured, the cognitive component of psychological empowerment draws on its roots in critical consciousness and is vital for bringing psychological empowerment to the community level (Christens, 2013).

The role of power in the measurement of empowerment is also the focus of much criticism. Though concern that empowerment research conflates possessing a sense of empowerment with actual changes in power relations was first articulated over two decades ago (Riger, 1993), this critique remains relevant (Woodall et al., 2012; Cattaneo, Calton, & Brodsky, 2014). To be empowered is to gain power at individual and social or community levels (Cattaneo, et al., 2014); therefore, definitions and assessments of empowerment must consider
different manifestations of power (e.g., power over, power to, and power from) in order to capture actual changes in power relations, as opposed to individuals’ sense of empowerment (Riger, 1993). Empowerment research must also include the importance of relevance to the individuals seeking empowerment. Existing work has a tendency to make assumptions about individuals’ needs and a failure to include what is relevant and personally meaningful to those being empowered (Cattaneo et al., 2014). Thus, definitional precision in empowerment research requires consideration of the role of power and personally meaningful goals for those being empowered. Finally, reliable and valid context- and population-specific measurements of empowerment are needed (Hunter, Jason, & Keys, 2013). Specifically, these measures need to address the higher-order nature of empowerment as a multidimensional construct (Peterson, 2014). Current attempts tend to succumb to a “menu approach” in empowerment measurement, in which only convenient elements of empowerment are investigated without representing the dynamic relationship between individual and community levels (Cattaneo et al., 2014).

In order to address many of these issues in empowerment theory and research, Cattaneo and Chapman (2010) developed the Empowerment Process Model (Figure 1). Developed in work with domestic violence survivors, their model integrates existing research on empowerment in community psychology to provide a more comprehensive and detailed definition of the construct, as well as to promote more precision in its measurement. The model defines empowerment as,

“an iterative process in which a person who lacks power sets a personally meaningful goal oriented toward increasing power, takes action toward that goal, and observes and reflects on the impact of this action, drawing on his or her evolving self-efficacy,
knowledge, and competence related to the goal. Social context influences all six process components and the links among them” (Cattaneo & Chapman, 2010, p. 647).

Personally meaningful and power-oriented goals are a key component of the model. The inclusion of personally meaningful goals allows researchers to take into consideration the influence of social and cultural contexts on empowerment. In order to address what is important to the population of interest, researchers must be considerate of the social and cultural norms and expectations of the given context. Measuring power-oriented goals recognizes that identifying and changing existing power dynamics is necessary for empowerment.

Figure 1. Cattaneo and Colleagues’ (2010; 2015) Empowerment Process Model
In addition to goal setting, the EPM addresses several other main components. Self-efficacy refers to an individual’s sense of agency and her beliefs in her ability to reach her goals. Knowledge is the “how to” component of empowerment, referring to an individual’s recognition of existing power dynamics and available resources needed for goal attainment. The competence component of the model specifies individuals’ actual skills and abilities, related to achieving their goals. It requires identifying skill deficits and building new skills. Importantly, the authors distinguish between competence and knowledge, specifying that “knowing what to do is not the same thing as knowing how to do it” (p. 653). Finally, the model includes action and impact components, which refer to action taken to achieve goals and reflection on the outcome of that action, respectively. The action component is specifically linked to both knowledge and power, so individuals take action while being aware of existing power dynamics. Social context plays an important role in the impact component, as reflection on the impact of one’s actions can highlight contextual obstacles to action.

The EPM represents a useful starting point for specifying the empowerment process in a given context (Cattaneo & Chapman, 2010). It promotes precision by providing specific, measureable components of the higher-order empowerment construct (Peterson, 2014). Cattaneo and Chapman (2010) suggest that though the entire model does not need to be measured at once, it is useful to use the model as a guiding framework to contextualize empowerment research. They also suggest that the EPM can be useful in the development and implementation of empowerment-based programs. Thus, the recommendations established by Cattaneo and colleagues (2010; 2015) regarding the EPM help guide the discussion of empowerment in physical activity in this conceptual review.

Existing Research on Empowerment and Physical Activity
Though not a primary focus of any existing empowerment reviews, the physical activity setting\(^1\) represents one context that may allow individuals to build self-efficacy, skills, knowledge, and community, thus promoting empowerment and the attainment of important health and wellbeing outcomes (Laverack, 2006). The benefits of physical activity are well documented (U.S. Department of Health and Human Services, 2008). Participation in moderate to vigorous forms of physical activity is associated with reductions in cardiovascular and obesity-related illness, as well as several important mental health benefits (Reiner, Niermann, Jekauc, & Woll, 2013; Penedo & Dahn, 2005). Exercise and physical activity have been known to reduce depression and anxiety in women (O’Dougherty, Hearst, Syed, Kurzer, & Schmitz, 2012; Asztalos, De Bourdeaudhuij, & Cardon, 2010), and are related to improved mood (Penedo & Dahn, 2005) and emotional wellbeing (Hogan, Catalino, Mata, & Fredrickson, 2015). It is important to recognize, however, that achieving these psychosocial benefits is reliant on intentionally programmed and structured physical activity. Participation in some physical activities, like sport, can promote comparison to others or aggression and violence, which negates the aforementioned potential benefits (Coakley, 2014).

The potential mental benefits of physical activity participation are especially important for girls and women who are often restricted by traditional gender norms that perpetuate a sense of powerlessness and keep them from feeling competent in the use of their bodies (Blinde, Taub, & Han, 1993; Young, 1980; Verhoef, Love, & Rose, 1992). In general, women do not prioritize their own leisure time and instead spend time prioritizing others. It has been argued that empowerment is one mechanism that allows women to value their own leisure time, which may

\(^{1}\) This review uses the World Health Organization’s definition of physical activity as any physical movement that requires energy expenditure (World Health Organization, 2015). Thus, a broad interpretation that includes fitness and sport programs in discussion of physical activity is used.
lead them to demand that their perspective and needs be valued in other areas of their lives (Henderson & Dialeschki, 1991). Intentionally designed physical activity programs that foster a sense of community and validate women’s experiences present one context for providing women with an opportunity to be empowered both within the context of physical activity and in their daily lives.

Several studies have looked at women’s empowerment as either a process that can be facilitated by physical activity, or as an outcome of physical activity participation (see Table 1 for a summary of these studies). Some of this research employs feminist perspectives, such as postmodern feminism (Kagan & Morse, 1988) or feminist psychotherapy (Vasquez, 2002) to analyze existing physical activity opportunities for women. Kagan and Morse (1988) were critical of mainstream exercise aerobics videotapes of the 1980s, arguing that though movement can be foundational for women to build self-esteem and create community, the videotapes maintain the status quo and keep women from autonomously seeking out their own opportunities for growth and community. Later, Vasquez (2002) advocated for a therapeutic approach for working with oppressed and marginalized women that includes physical activity intervention. She suggested that therapy that addresses the physical health of women could facilitate the empowerment process as they overcome systematic oppression that pervades their lives. Unfortunately, though both of these works are grounded in clear feminist perspectives that orient physical activity as a potential source of empowerment, neither provides a clear or theoretically sound definition of what that empowerment actually is.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Program</th>
<th>Study Design</th>
<th>Role/Definition of Empowerment</th>
<th>Important Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Röger, et al., 2011*</td>
<td>&quot;Movement as an Investment in Health&quot; – Program for adult women</td>
<td>Participatory approach involving participants in design and implementation of</td>
<td>Defined as a process that enables &quot;people and their communities (especially disadvantaged communities) to take control over their own lives&quot; (p. 465). Authors used Zimmerman's nomological network to inform program design, semi-structured interviews, and analysis.</td>
<td>All program participants had increased feelings of self-efficacy at the individual level, the majority felt more competent and participants who were involved in the implementation of the program felt empowered at the organizational level.</td>
</tr>
<tr>
<td>Lindgren, et al., 2010*</td>
<td>Exercise intervention designed for &quot;non-physically active adolescent girls&quot;</td>
<td>Longitudinal with pre- and post-test and randomized samples</td>
<td>Empowerment is a process that increases girls' awareness of their own needs, which allows them to be an active participant in the program development and strengthens their perceptions of their own self-efficacy.</td>
<td>Intervention group reported increases in general self-efficacy, but there were no changes in exercise-related self-efficacy.</td>
</tr>
<tr>
<td>Lavoi, 2007</td>
<td>Female and male sport athletes in the National Collegiate Athletic Association</td>
<td>Analysis of open-ended written responses to prompt asking student-athletes what a close relationship with a coach looks like</td>
<td>Identified through the analysis as a dimension of closeness in coach-athlete relationships and defined as &quot;the experience of feeling personally strengthened, encouraged and inspired to take action through connection in a relationship&quot; (p. 504).</td>
<td>Empowerment was identified by 10% of the female sample as a dimension of closeness in coach-athlete relationships.</td>
</tr>
<tr>
<td>Segar et al., 2002*</td>
<td>&quot;Fitting in Fitness for Life!&quot; – Program for adult women</td>
<td>Longitudinal (pre- and follow-up)</td>
<td>Fitness program designed to include consciousness raising discussions rooted in Freire's empowerment theory about barriers to exercise for women.</td>
<td>Women had decreased feelings of guilt for exercising, were more proactive in seeking out opportunities to be active, and were more flexible in determining what counts as physical activity.</td>
</tr>
<tr>
<td>Vasquez, 2001*</td>
<td>Feminist psychotherapy</td>
<td>Qualitative analysis of semi-structured interviews and focus groups</td>
<td>Discussions and exercises consisting of conversations involving participants who were more physically active and less so, and exercises focused on empowerment and personal control.</td>
<td>Participants reported increased sense of personal control and empowerment, and a greater ability to handle the challenges of their own study.</td>
</tr>
</tbody>
</table>
Sessions work with Latina clients who exercise as a process and outcome of exercise interventions in feminist therapy. Overall health of women contribute to the empowerment process, especially for Latina women and groups who experience oppression.

*Blinde, et al., 1993*

Female sport athletes in the National Collegiate Athletic Association Qualitative analysis of 24 phone interviews

Empowerment is a process in which disadvantaged individuals develop skills and appreciate their ability to achieve personal empowerment outcomes. Bodily competence, perceptions of a competent self, and a proactive approach to life are empowered in a process where women take control and are active in their lives. Authors focus on personal empowerment as the foundation for community empowerment and emphasize the role of self-efficacy, perceptions of competence, and locus of control.

Kagan, & Morse, 1988

Jane Fonda Aerobics Videocassettes

No explicit definition of empowerment, videos of movement in exercise analyzed to critique the movement in exercise videos. Movement can be a means of oppression for Latina women and groups. Videos identified three personal empowerment outcomes: bodily competence, perceptions of a competent self, and a proactive approach to life. Videocassettes

Notes. * = studies that explicitly stated a theoretically grounded definition of empowerment.
Qualitative investigations have identified several key themes regarding how women can be empowered in physical activity contexts. Some of these findings relate directly to understanding existing barriers to physical activity women. For example, following a six-week intervention that integrated physical activity with consciousness-raising discussions regarding these barriers, women expressed more enjoyment and less guilt over being active (Segar, Jayaratne, Hanlon, & Richardson, 2002). Additionally, when women were included in the process of designing and implementing their own physical activity programs, they were able to address perceived barriers and experience more empowerment outcomes on individual as well as community/organizational levels (Röger, Rütten, Frahsa, Abu-Omar, & Morgan, 2011).

Qualitative research in sport-specific contexts has looked at relationships and empowerment. For example, the quality of relationships has been identified as an empowering element for female collegiate athletes. Close relationships with coaches allowed female athletes to feel strengthened, encouraged, and able to take action in their own lives (Lavoi, 2007). Qualitative work has also suggested that sport participation can promote personal empowerment through three outcomes of bodily competence, perceptions of a competent self (e.g., possessing a positive sense of self and an internalized locus of control), and a proactive approach to life (Blinde, et al., 1993).

There are far fewer quantitative evaluations of empowerment in physical activity settings, likely due to the lack of comprehensive, reliable, and valid context-specific measures. Typically, quantitative assessments have measured constructs that are related to empowerment. For example, in an investigation of empowerment in a physical activity intervention designed for non-active adolescent girls, general self-efficacy and exercise-specific self-efficacy were measured and treated as empowerment outcomes (Lindgren, Baigi, Apitzsch, & Bergh, 2010). Moore and Fry’s (2014) Empowerment in Exercise Scale (EES), which was developed in
conjunction with the Ownership in Exercise Scale, is an important first step in addressing the lack of context-specific quantitative measures of empowerment. The EES used the operationalization of empowerment as an increased sense of control and the transference of benefits from the exercise experience to other areas, and argued that empowerment is facilitated by exercise climates that are caring and supportive. However, they do not ground this definition in any existing empowerment theory. Thus, the five-item scale addresses the role of instructor feedback and respondents’ knowledge, competence, and confidence in the physical activity context, but there is no clear, theory-driven definition of empowerment. Though the authors found strong psychometric support for the scale, no additional research has been conducted to replicate their findings.

Though some of the existing work on empowerment in physical activity settings is grounded in empowerment theory, there are still several gaps and limitations. For example, these studies employed different definitions of empowerment. Some cited commonly used definitions in early community psychology research (Blinde, et al., 1993), while others were rooted in well-known empowerment theory such as Freire’s (1970) critical consciousness perspective (Segar, et al., 2002) or Zimmerman’s nomological network of psychological empowerment (Röger, et al., 2011). Others used definitions of empowerment that were based on other more frequently measured constructs, such as self-efficacy (Lindgren, et al., 2010). Still other studies failed to provide any theoretically grounded definition of empowerment (e.g., Vasquez, 2002; Kagan & Morse, 1998; Lavoi, 2007; Moore & Fry, 2014). Additionally, with the exception of studies that utilized participatory approaches (e.g., Röger et al., 2011 and Segar, et al., 2002), these studies fail to articulate a difference between participants developing a “sense” of empowerment or actual empowerment (Riger, 1993). Thus, given the disparate nature of existing research,
application of the Empowerment Process Model may provide a more cohesive and consistent framework for scholars to approach the operationalization and measurement of empowerment in physical activity contexts

**Recommendations for Measurement**

Certain components of empowerment remain consistent across contexts, such as its multidimensional and multi-level nature (Cattaneo & Chapman, 2010; McWhirter, 1991; Peterson, 2014; Zimmerman, 1995), the distribution of power to marginalized groups (Spreitzer, 1997; Freire, 1970; Pizarro, 1998; McWhirter, 1991; Cattaneo, et al., 2014), and increasing knowledge, skills, and competence (Spreitzer, 1995; Gibson, 1995; McWhirter, 1991; Cattaneo & Chapman, 2010). Existing research on empowerment in the physical activity setting addresses some of these components, but a more comprehensive approach governed by a framework such as the EPM is needed in order to capture the full construct in this context. The various components of empowerment specified by the EPM are reflected in Peterson’s (2014) argument for the measurement of empowerment as a higher-order construct. The EPM is a useful starting place for examining empowerment in specific contexts and can be used to identify how different elements manifest in different contexts. Thus, this model and Peterson’s contention that empowerment is a higher-order construct inform several recommendations for future measurement in physical activity contexts.

Moore and Fry’s (2014) EES represents an important first step in quantitatively assessing empowerment in this context, but fails to capture the complexity of the construct. Specifically, its five items measure confidence to do a specific physical activity, knowledge of the activity, understanding of the basics of the activity, and how an instructor’s feedback influences confidence to do the activity. While these items arguably address the need to measure
knowledge, skills, and self-efficacy (Cattaneo & Chapman, 2010), these components should be conceptualized as first-order empowerment constructs; thus, using a single item to assess the first-order construct would likely lead to a poorly identified model (Kline, 2010). Therefore, though the EES does address important components of empowerment, an improved measure would include additional items to assess each first-order component of the higher-order empowerment construct (e.g., knowledge, skills, and self-efficacy). The factor structure of such a model would also need to be tested through confirmatory factor analysis (Kline, 2010).

Additionally, existing empowerment in physical activity research has yet to explicitly address the iterative process of setting goals, acting on those goals, and reflecting on their impact. In order for empowerment to occur, women must be able to set and act on personally meaningful and relevant goals (Cattaneo, et al., 2014). A wide range of goals may exist within the context of physical activity, ranging from physical change and accomplishment (e.g., to get stronger) to mental and emotional outcomes (e.g., to feel better about myself). Though extensive research has evaluated motivation for exercise within a variety of frameworks (Hagger & Chatzisarantis, 2007; Biddle, Wang, Kavussanu, & Spray, 2003), the goals and motives of active women have not been explored in depth as they relate to theoretically grounded definitions of empowerment. Assessment of the types of goals women have, both within the physical activity contexts and in their daily lives, and how physical activity interventions can influence the iterative process of goal setting, attainment, and reflection, is needed.

Existing critiques regarding researchers’ tendency to study individuals’ “sense” of empowerment (Riger, 1993) should be considered in future measurement of women’s empowerment in physical activity settings. Structural and social barriers exist to women’s participation in physical activity (Verhoef, et al., 1992), so research studies should be designed in
ways that assess women’s understandings of their own power and ways in which it can be redistributed, both within the physical activity setting and in their daily lives. This may best be achieved through qualitative methods that provide women with the opportunity to reflect on and share their experiences of seeking greater power through physical activity. For example, previous qualitative research has shown that providing women with the opportunity to increase their physical power and strength can empower them to assert themselves and seek a redistribution of power in other contexts, thus providing opportunities for women to act on their own behalves outside of the physical activity setting (Blinde et al., 1993). Mixed methods research has also been useful for examining changes in power in the physical activity context. Segar and colleagues’ (2002) supplemented their quasi-experimental design with focus groups, which proved a useful tool for gauging participants’ attitudes and behavior changes following participation in a physical activity program. Additionally, qualitative methods may be useful for identifying elements of the physical activity context that build social or community power (Christens, 2013). Conversations before, during, and following participation in an empowerment-based physical activity program should include questions that address participants’ community-level empowerment, such as increases in their community activism or use of community resources (Röger, et al., 2011).

Finally, though Cattaneo and colleagues’ (2010; 2015) Empowerment Process Model is very comprehensive, it fails to include the role of relationships in empowerment. The influence of social context may capture this, but relationships are not explicitly addressed in the model. Riger’s (1993) contention that conceptualizations of empowerment should emphasize community over conflict suggests that the relationships women have with others is an important component for empowerment. Thus, the role of relationships should also be assessed in physical
activity research. Some research has shown that positive and close relationships have been shown to be empowering for women. For example, female athletes’ perceptions of closeness with their coaches can be empowering. Strong, positive relationships can motivate female athletes to take action and feel personally strengthened (Lavoi, 2007). Additional research is needed to see how relationships in physical activity settings can contribute to multiple levels of women’s empowerment.

**Interventions that Empower: A Case Study of Pink Gloves Boxing**

The Empowerment Process Model that was used to guide the aforementioned recommendations for defining and measuring empowerment in physical activity settings can also be used to inform the design and implementation of empowerment-based physical activity interventions (Cattaneo & Chapman, 2010). Pink Gloves Boxing (PGB) is one program that, though not designed using the model, reflects several components of the EPM and is a useful case study for how the EPM can be used to facilitate program development and implementation in physical activity settings. Pink Gloves Boxing is a women’s only group fitness class located in the United States and Europe that aims to empower women. Its vision is to “be the best fitness community and reinvent group exercise by *Revealing the Champion from Within Each Other*.”

All PGB members and trainers are provided with a Members Manual, which operationalizes empowerment in PGB, provides specific goal-setting steps for members, and outlines a standardized boxing-based curriculum. The class operates on a Tier System, which members progress through by achieving and demonstrating specific physical, mental, and leadership skills. PGB operationalizes empowerment with three Tools of Empowerment: Achievement, Community, and Fun. Further, the Tools of Empowerment are guided by ten Core Habits (e.g., Welcome with Open Arms, Be a Little Weird, Be Confident Yet Humble, etc.) that members are
encouraged to practice and embody in order to pursue the Tools of Empowerment. Given the intentional design of this program and its clear objective of empowerment, PGB was selected as a useful program for examining how the principles of the EPM can be applied to physical activity programs and interventions for women.

The Pink Gloves Boxing curriculum, as articulated in both the Members Manual and in standardized workouts provided to each club, aligns with the EPM in several ways. PGB explicitly addresses the importance of personally meaningful goals for members and trainers, who are also encouraged to outline their goals in the manual. Several pages of the PGB manual are dedicated to self-reflection and goal setting. Members are encouraged to reflect on who they are, to set specific and attainable goals (related to their physical health as well as other areas of their lives), and to articulate why those goals exist. Given the program’s emphasis on community, women are encouraged to share their goals and rationales with each other and to support each other as they take action towards their goals. The flexibility of the goal setting process allows for members to choose the goals that are personally meaningful and relevant to them, which is specifically addressed in the EPM. Cattaneo and Chapman (2010) also highlight the importance of social context as it influences the iterative process of empowerment. In PGB, though implementation is standardized in the manual, trainers are comfortable reflecting on the atmosphere and context of their club and thus exercise flexibility and autonomy in adapting their implementation to meet the needs of their members. PGB clubs exist across the country and in Europe, so diversity in membership and members’ needs is expected. The ability of trainers to
adapt the program to address the needs of different members is key to the empowerment outcomes of PGB.²

Additionally, the PGB program addresses several of the key components of empowerment specified in the EPM. The focus on achievement as an element of empowerment provides women with the opportunity to learn and practice boxing-specific skills and knowledge. Further, since each class ends with a cool down session in which women ask each other questions, share stories, and spend time getting to know each other, members have the opportunity to practice communication and social skills, while developing relationships with each other. The community built through this process provides an environment where women can challenge themselves physically and mentally at optimal levels, supporting positive self-efficacy regarding what they can accomplish (Bandura, 2002). Finally, though it is not specified in the PGB manual, a review of PGB clubs social media presence and conversations with PGB personnel reveals that several clubs have reached out to their community by hosting charity fundraisers, marching in community parades, and volunteering to teach boxing skills and healthy habits at local middle schools. This organized community participation aligns with the EPM and provides initial evidence that the community formed within the PGB club can extend beyond the fitness studio. It also provides evidence that participation in a community-focused program such as PGB can create opportunities for action and addressing power imbalances in women’s lives, which gives women the chance to seek actual empowerment, as opposed to just possessing the sense of empowerment.

² This case study of PGB relies on data collected in an evaluation study, the manuscript for which is in process.
Unfortunately, the PGB curriculum fails to address the role of power disparities in women’s lives. Recognition of power disparities and corresponding action to correct disparities in favor of the marginalized is identified as a key element of empowerment (Cattaneo, et al., 2014). It is possible that conversations regarding barriers to women’s exercise and other obstacles to empowerment occur in PGB, but these topics are not standardized in the curriculum. Further research is needed to investigate if and how this may happen. It is important to note, however, that the community focus of the PGB program aligns with arguments for how physical activity settings can be designed to promote the feminist conceptualization of power as one that emphasizes creative energy, cooperation, and community (Riger, 1993; Theberge, 1987). PGB provides an excellent context for exploring these theoretical connections.

**Conclusion**

Though some have criticized empowerment as a “buzz word” with definitional ambiguity (Woodall, et al., 2012), this paper argues that the construct is still valuable and worthy of rigorous research. Unfortunately, its investigation in the physical activity context suffers from incomplete operationalization and, in most instances, fails to fully measure the complex construct. Using the Empowerment Process Model as a guiding framework, recommendations were made for how future research can improve the measurement of empowerment in physical activity settings. Additionally, Pink Gloves Boxing was presented as a case study for exploring how the EPM can guide the development of empowerment-based physical activity programs. Supportive and communal physical activity interventions that allow women to identify and overcome power disparities can empower women to take action to address disparities, and it is imperative that researchers find inclusive and rigorous means for evaluating them.
MANUSCRIPT 2: Integrating Process and Impact Evaluation to Assess Empowerment Outcomes in Women’s Only Group Fitness

Widespread recognition of the physical, mental, and emotional health benefits of physical activity (U.S. Department of Health and Human Services, 2008; Penedo & Dahn, 2005) has led to the growing notion that sport and physical activity can empower women and girls (Kirk, 2012). Much of the existing research and practice emphasizes the emotional and psychological benefits of physical activity programs for adolescent girls (Burgess, Grogan, & Burwitz, 2006; Resnicow et al., 2000). Less attention has been paid to the empowering potential of physical activity programs designed for women. Existing work on women’s empowerment in physical activity has failed to directly connect how implementation of the program contributes to empowerment, as well as to comprehensively measure the complex construct. In order to address these existing limitations, this study presents results of an evaluation of Pink Gloves Boxing (PGB), a women’s only fitness program that aims to empower women.

Empowerment

Empowerment is a widely used and broadly interpreted interdisciplinary construct that is often cited as a desired programming outcome in various fields, with little definitional clarity regarding its exact meaning. Rappaport (1987) provides an often-cited, broad definition of empowerment as a process in which people and their communities gain control over their lives. More specifically, Zimmerman’s (1995) nomological network of psychological empowerment proposes three components: intrapersonal, interactional, and behavioral. The intrapersonal component focuses on individual beliefs and what people think about their own abilities to reach a specific goal. The interactional component of psychological empowerment refers to a person’s understanding and awareness of their environment and various resources that are available or
unavailable to them. Finally, the behavioral element refers to the actions individuals take within their environment. Some researchers argue that an over-emphasis on individual empowerment dilutes the definitional precision of empowerment by distracting from the important focus on community-level empowerment (e.g., the process by which a community works to gain more institutional or structural power) (Woodall, Warwick-Booth, & Cross, 2012); however, it has been argued that psychological empowerment integrates multiple levels of empowerment (Christens, 2013) and many context-specific evaluations of empowerment rely on this framework (e.g., Peterson, Lowe, Hughey, Reid, Zimmerman, & Speer, 2006; Speer, Jackson, & Peterson, 2001; Röger, Rütten, Frahsa, Abu-Omar, & Morgan, 2011).

This study employs a comprehensive model of empowerment developed by Cattaneo and colleagues (2010; 2015) in an attempt to synthesize the disparate work on empowerment (Figure 1). The Empowerment Process Model (EPM) consists of six components: powerful and meaningful goals, self-efficacy, knowledge, competence, action, and impact. As an iterative process, an individual can move through the main processes in which she defines “meaningful, power-oriented goals and objectives,” carries out actions to achieve the goals, and then reflects on the impact of her actions relative to the pursuit of her goals (Cattaneo & Chapman, 2010, p. 647). During this process, an individual draws on her evolving sense of self-efficacy, competence, and knowledge. This all occurs within a broader social context, which influences the processes and represents the power discrepancy produced by social inequalities and institutionalized forms of oppression (Christens, 2013). The EPM has important implications for research, particularly as a starting point for conceptualizing strategies for measuring empowerment in different settings or with different populations.
The Physical Activity Context

Physical activity settings provide an important and unique context for producing positive psychological, emotional, and mental health outcomes, including empowerment. In addition to physical benefits such as reduced cardiovascular disease and reduced obesity-related illnesses, physical activity also reduces feelings of depression and anxiety (U.S. Department of Health and Human Services, 2008; Lawlor & Hopker, 2001). Specific research with women has shown that physical activity can function as a buffer against depression while also reducing anxiety (O’Dougherty, Hearst, Syed, Kurzer, & Schmitz, 2012; Asztalos, De Bourdeaudhuij, & Cardon, 2010). Women can also experience positive psychological outcomes such as developing a more
positive outlook towards oneself, experiencing greater enjoyment, and gaining a generally more positive outlook on life (Kull, 2002).

It has also recently been argued that intentionally programmed physical activity interventions can empower women and girls (Kirk, 2012). The emotional and psychological benefits for girls are well known, as physical activity interventions for adolescent girls have been shown to improve emotional self-efficacy (Ullrich-French, Cole, & Montgomery, in revision), reduce body image anxiety (Lindwall & Lindgren, 2005), and create a buffer against societal pressures to reach an unobtainable body ideal (Swanson, Spencer, Dell’Angelo, Harpalani, & Spencer, 2002). However, little research has evaluated intentionally programmed physical activity interventions for girls that target a theoretically grounded definition of empowerment. For example, in one program targeting non-active girls, increased general self-efficacy was cited as a form of increased empowerment (Lindgren, Baigi, Apitzsch, & Bergh, 2010). Though self-efficacy has been conceptualized as a component of empowerment (Cattaneo & Chapman, 2010), it is not a sufficient representation of the full construct. Research that captures a more comprehensive picture of empowerment is limited.

Research on intentionally designed physical activity interventions that specifically aim to empower adult women is also limited. Röger and colleagues (2011) employ Zimmerman’s nomological network in their qualitative examination of a physical activity program for socially disadvantaged women in Germany. This intentionally structured intervention involved participants in both the design and delivery. Findings suggest that empowerment at the individual level was achieved by all participants, while those who contributed directly to the planning and delivery of the program experienced additional community level empowerment. Another intentionally designed program integrated physical activity with six sessions of moderated group
discussions, which relied on consciousness-raising techniques to help women better understand the various barriers that prevent them from engaging in physical activity regularly (Blinde, Taub, & Han, 1993). These studies are strong examples of using theoretically grounded conceptualizations of empowerment; however, additional research is needed in order to connect how elements of the physical activity program and its implementation influence women’s empowerment.

**Program Implementation: Process and Impact Evaluation**

The existing work on empowerment for women in physical activity is missing information regarding how programs are implemented, and how the process of program implementation influences outcomes. In order to address this gap, this study integrates process and impact evaluation methods to assess the extent to which a women’s only fitness program is meeting its stated goals, and how its implementation influences that process.

Process evaluations are an effective tool not only for understanding the internal dynamics of a program, but also for measuring implementation fidelity and determining the process of how these outcomes may or may not be met (Patton, 2015; Saunders, Evans, & Joshi, 2005). Process evaluations emphasize the *how* of program outcomes, as opposed to the outcomes themselves and compare the delivery of programs or policies to the initial goals and objectives set forth by the program, with the goal of determining if it is delivered to its audience as intended (i.e., fidelity). Berkel and colleagues’ (2011) integrated model for assessing program implementation specifies four dimensions of implementation that occur within program delivery. In addition to fidelity (i.e., if the program is delivered as designed), they highlight quality of delivery (i.e., instructor skill at delivering the material and interacting with participants), program adaptation
(i.e., how instructors adjust or change delivery or program content), and participant responsiveness (i.e., the extent to which participants are engaged in the program).

In addition to employing a process evaluation to assess implementation fidelity, quality, adaptation, and participant responsiveness, impact evaluation was used to assess whether or not the program goals are achieved (Bamberger, Rugh, & Mabry, 2012). Although there are some definitional debates associated with impact evaluation (White, 2010), for the purposes of this study, the working definition of impact evaluation is the use of quantitative methods to attempt to understand whether or not change in outcomes can be attributed to an intervention, or in this case, participation in a group fitness class. Combining impact and process evaluations creates insights into not only whether or not program goals are met, but also how the implementation of the program can explain outcomes (Bamberger, et al, 2012; Helitzer & Yoon, 2002; Saunders, et al., 2012). Thus, this study integrates process and impact evaluations of a women’s only group fitness class in order to determine if the class empowers participants, and, if so, how.

**Program Overview**

Pink Gloves Boxing (PGB) is a women’s only group fitness class that operates from a detailed manual and standardized curriculum in locations across the United States and Europe. The program’s main objective is to empower women through the elements of fun, achievement, and community in a group exercise setting. Figure 2 presents a detailed logic model of the program. Logic models are effective tools for evaluation. In the case of PGB, the logic model clarifies the link between PGB’s resources and activities and the articulated empowerment outcomes (Cooksy, Gill, & Kelly, 2001). The Pink Gloves Boxing Manual outlines the program’s Tier System which women advance through by demonstrating specific physical, mental, and leadership skills at each level. At each tier participants earn a piece of gear, with
Be the best fitness community and reinvent group exercise by revealing the Champion from Within Each Other.

**Program Vision**

**Inputs**
- Outside vendors (from PGB HQ and Program resources)
- Facility access and cost
- Participant registration

**Outputs**
- Program fidelity and manual adherence
- Participant and trainer buy-in
- Affordable space and resources
- Trained and certified staff

**Outcomes**
- Participants fitness and skill advancement
- Relationship building and skill advancement
- Health lifestyles and skill advancement

**Activities**
- What PGB invests:
  - Staff
  - Time
  - Money
  - Equipment
  - Training/Continuing education

- What PGB does:
  - Deliver class
  - Train instructors
  - Provide resources
  - Develop new content
  - Special events

- Who PGB reaches:
  - Community residents
  - University students
  - Schools/clubs
  - Industry professionals

**Short term results of PGB:**
- Learn skills
- Communication
- Motivation
- Attitude change

**Medium term results of PGB:**
- Personal fitness
- Relationship building
- Skill advancement
- Empowerment

**Long term results of PGB:**
- Health lifestyles
- Accountability
- Community of support
- Skill advancement
- Empowerment

**Assumptions**
- Trained and certified staff
- Adequate space and resources
- Participant and trainer buy-in
- Program fidelity and manual adherence

**External Factors**
- Participant registration
- Facility access and cost
- Program resources (from PGB HQ and outside vendors)

**Figure 2. Pink Gloves Boxing Logic Model**
each item gaining more significance as they progress (i.e., pink wraps, pink gloves, pink mitts, etc.). Every class uses circuit and/or high intensity interval training to focus on skill development and general cardiovascular and muscular endurance conditioning. Following each workout, as well as on their own time, participants progress through goal setting steps outlined in the PGB Manual, in which they define the what, why, and how of their goals. This is done in an environment facilitated by trainers to be supportive and safe, allowing participants to be vulnerable and honest, which can allow them to feel comfortable moving towards change and achieving their goals. The manuals are distributed to every member, either at the start of their first session or at a PGB Training Camp, which certifies trainers and allows members to gain more experience. Stakeholders identified for this evaluation included participants, trainers, the professional staff who coordinate the delivery at each site, and the founders of the program.³

**This Study**

Additional research is needed to provide a theoretically grounded evaluation of empowerment-based physical activity programs, as well as to connect how implementation of those programs leads to empowerment. This study conducted a process evaluation using multiple qualitative data sources to assess implementation of Pink Gloves Boxing and to understand the experiences of women in the program at three different locations. Specific attention was paid to the fidelity and adaptation elements of implementation (Berkel, et al., 2011). Delivery of Pink Gloves Boxing is informed by a manual, which specifies not only the organization of classes but also operationalizes empowerment (i.e., achievement, community, and fun) and provides goal- setting

³ It should be noted that the author is a Master Trainer in Pink Gloves Boxing and therefore is known to some members and trainers at each site. This relationship was used for entrée and allowed for more interactive evaluation of the program (King & Stevahn, 2012). The author worked to practice responsivity in data analysis in order to acknowledge her own biases related to her experience with the program.
steps for participants. It was therefore hypothesized that implementation fidelity would be related to the extent to which each location utilized and adhered to the PGB Manual.

The extent to which the program is meeting its outcomes was assessed with an impact evaluation consisting of a quasi-experimental design. Findings from the process evaluation were used to develop implementation fidelity and adaptation scores, which were then used to predict change in outcomes measured in the impact evaluation to better understand how implementation processes relate to outcomes in physical activity programs for women. Through exploration of the PGB Manual and informal conversations with relevant program stakeholders, it was determined that the EPM was well aligned with PGB’s emphasis on leadership, skill building, community, and achievement through goal setting; therefore the EPM was used to inform selection of multiple measures to capture empowerment (i.e., self-efficacy for exercise, empowerment in exercise, and goal setting). Additional measures were also included for exploratory purposes as potential contributing factors to empowerment (i.e., self-compassion), as important for explaining program outcomes (i.e., perceptions of autonomy support), or because they reflected PGB’s definition of empowerment (i.e., enjoyment).

Methods

Process Evaluation

Multiple sources of qualitative data were used to develop an understanding of how Pink Gloves Boxing is delivered across three locations, as well as to explore the experiences of the women in the classes at each location. Sources of data include content analysis, focus groups with PGB participants and PGB trainers, interviews with PGB programmers, and participant observation. All data collection procedures were approved by IRB.
**Participants and procedures.** Process evaluation participants were a purposive sample of women who are participants, trainers, and coordinators of Pink Gloves Boxing fitness classes across three different locations in Washington and Montana. Of these three locations, two were based in public university recreation programs and one at a private health club. Participants and trainers from a community-based gym were included in order to diversify not only the experiences of the sample, but also the strategies and challenges related to program implementation in different settings. Program coordinators were contacted via email to coordinate data collection. Data was collected over a two to three day period at each location, which allowed the researcher to observe and participate in multiple classes and conduct interviews and focus groups.

**Content analysis.** The first step in data collection for the process evaluation was a detailed content analysis of the Pink Gloves Boxing manual. Content analysis allows the researcher to distill written content into categories to make inferences about the material (Elo & Kyngäs, 2007). The purpose of this content analysis was to clarify the programming objectives and standards established by PGB for ideal delivery of the program content, which then informed the guiding questions for both the focus groups and interviews, as well as the formation of a priori categories for analysis of the focus groups and interviews. Additionally, the content analysis served to evaluate the narrative and language choices of the manual to develop an understanding of how empowerment is operationalized as the primary outcome of PGB.

**Focus groups and interviews.** Separate focus groups were conducted with PGB instructors and PGB participants in order to provide insights into program implementation and various stakeholders’ experiences (Krueger & Casey, 2009). Instructors were asked open-ended questions regarding their relationships with each other, participants, and programmers, as well as
their use of and opinions regarding the manual. Participants were asked open-ended questions about their relationships with each other and their instructors, as well as their opinions and use of the manual. Both groups were also asked about their general experience in Pink Gloves Boxing and were given the opportunity to add anything at the conclusion of each group.

Responsive interviews were conducted with programmers at each location, as well as one of the founders of PGB. Responsive qualitative interviews treat the interview as an extended conversation that develops the relationship between the interviewer and interviewee (Rubin & Rubin, 2012). A list of questions was generated prior to the interviews, but the interviews were treated as conversations and allowed to flow in response to the interviewee. The responsive interviewing technique was deemed appropriate for these individuals due to their level of investment and knowledge associated with their professional role as fitness coordinators or directors, in order to achieve greater depth and understanding. Focus groups and interviews were all recorded for transcription purposes.

**Observation and participant observation.** Both observation and participant observation are valuable elements of evaluation research and are considered to be a useful tool for interacting with participants on a deeper level (Bamberger, et al., 2012; Patton, 2015). Observations of classes were conducted at each of the three locations on multiple occasions, with field notes taken for each observation. Areas of *a priori* observational emphasis included the instructors’ styles and cuing, participant involvement in the implementation of the class, use of or reference to the manual, and the relationships and interactions between participants and instructors. For each class, the researcher employed both formal and participant observation, generally participating in the warm-up, part of the circuit work, and the cool-down. A total of six classes were observed.
**Data Analysis.** A general inductive approach was used for analyzing the focus group and interview data in order to establish clear, defensible connections between the evaluation objectives (i.e., determining implementation fidelity, program adaptation, and gauging the experience of participants) and the raw data (Thomas, 2006). Results of the content analysis of the PGB Manual and the evaluation aims were used to inform the creation of *a priori* categories for both the focus groups and interviews. Two researchers then conducted separate close readings of the focus group and interview transcriptions. After the initial close reading, the researchers performed additional readings and identified meaningful units of text to contribute to category formation. According to Thomas (2006), “upper-level” or broader categories are likely to be informed by the evaluation objectives, as well as the content analysis. The more specific or “lower-level” categories emerged from multiple readings of the transcriptions. Following separate coding, the researchers came together to establish consensus on the codes. Results were synthesized with field notes from the observations to create summary reports for each site, which were sent to representatives at each location for review and member-checking, with any feedback from participants incorporated into a revised site report (Thomas 2006).

**Impact Evaluation**

A quasi-experimental design with online pre- and post-surveys was used to examine change over time in empowerment and related outcomes between women in PGB and those in traditional group fitness classes. As with the qualitative collection, all procedures were approved by the IRB.

**Participants and procedures.** Managers and coordinators of PGB programs were contacted via social media and email in order to recruit a diverse convenience sample of women in Pink Gloves Boxing programs across the country. Six locations participated, two of which were
university recreation programs. The remaining locations were privately owned gyms or health clubs. Additionally, women who participated in traditional group fitness classes (e.g., Zumba, cycling, step aerobics, etc.) were recruited via email from a large university in the Pacific Northwest. An online assessment of group fitness experience, demographics, and empowerment-related outcomes was distributed to all participants. A follow-up assessment with the same measures was sent out between seven and nine weeks later. PGB has recently increased their marketing targeted at universities, so this time frame was selected based on the typical system at university recreation centers to separate the semester into two “sessions” of classes; thus, seven to nine weeks captured the beginning and conclusion of one session of classes meeting between two and three times per week among both the PGB and comparison group.

**Measures**

**Empowerment.** The Empowerment Process Model (Cattaneo & Chapman, 2010; Cattaneo & Goodman, 2015) was used as a framework to measure empowerment. Thus several measures were included in the analysis to achieve a comprehensive measurement of empowerment that aligned with this model. Moore and Fry’s (2014) recently developed Empowerment in Exercise Scale (EES) assessed knowledge and confidence as elements of empowerment within the context of physical activity. The EES consists of five Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree) (e.g., “My confidence to do this activity on my own has increased,” “My knowledge of this activity has increased”). Moore and Fry (2014) conducted a confirmatory factor analysis of the scale, which demonstrated acceptable evidence of factorial validity, as well as strong internal consistency (Cronbach’s $\alpha = .89$). Comparable reliability was found in this study at both time points ($\alpha = .84$ at pre and $\alpha = .90$ at post). Self-efficacy was assessed using the Self-Efficacy for Exercise Scale (SEE; Resnick &
Jenkins, 2000). Nine items ask respondents to rank their confidence to exercise from 1 (not confident) to 10 (very confident) given different situations (e.g., “if the weather was bothering you,” “if you did not enjoy it”). The scale has demonstrated acceptable reliability with older adults (Resnick & Jenkins, 2000) and showed strong reliability at pre- and post-assessment in the present study ($\alpha = .87$ at both time points).

The goal-setting component of the EPM refers to the process of defining goals, acting towards achieving those goals, reflecting on the impact of those actions, and refining goals. At pre-assessment, respondents were asked how much they agree with twelve Likert-scaled self-report items, which were created by the primary researcher for this study in order to assess general goal setting (“I set goals regarding my physical fitness and health”), acting on goals (“I act on the goals I set regarding my professional life”), reflecting on goal setting (“I reflect on the impact of my actions when trying to meet my personal life goals”), and re-evaluating goals (“I re-evaluate the physical fitness and health goals I set for myself”) within the context of physical fitness and health, as well as personal and professional contexts. At post-assessment, respondents were asked to answer the same questions regarding the previous two months, and were also asked to about whether or not they feel they achieve their goals (“I have achieved one or more of my physical fitness and health goals”). Items ranged from 1 (strongly disagree) to 5 (strongly agree). A mean score for all of the items was calculated to represent overall goal processes. Means scores for each subscale (i.e., physical fitness and health, personal life, and professional life) were also calculated. Mean scores demonstrated acceptable reliability as context-specific subscales ($\alpha$ ranging from .84 to.88), and as a total score ($\alpha = .90$ at pre and $\alpha = .92$ at post).

xxxviii

4 Contact the corresponding author for the full scale.
**Self-compassion.** Rooted in Buddhist philosophy, self-compassion refers to the nonjudgmental understanding of the self and others during times of suffering and failure, as well as understanding one’s negative experiences within the larger human experience. It is also the ability to mindfully hold negative thoughts and feelings without ruminating (Neff, 2003a; Neff, Kirkpatrick, & Rude, 2007). As a psychological trait that promotes psychological resilience, self-compassion was included in the present study to explore the potential relationships between the ways women both think about and treat themselves and their empowerment (Neff, et al., 2007). Neff’s (2003b) 26-item Self-Compassion Scale (SCS), which consists of six subscales representing three opposing pairs of self-compassion elements (i.e., self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification), was used to assess self-compassion as both a total score and as individual subscales. Both the total score and subscales have demonstrated strong reliability among general populations (Neff, 2003b) and in this study ($\alpha = .95$ at pre and $\alpha = .92$ at post).

**Enjoyment in exercise.** Pink Gloves Boxing includes “fun” as a one of its “tools of empowerment” (Pink Gloves Boxing, 2012). Therefore, this study included Kendzierski and DeCarlo’s (1991) Physical Activity Enjoyment Scale (PACES) to assess the extent to which participants have fun and enjoy their experience. The scale provides sets of bipolar items and asks respondents to rate how they feel at the moment about the specified activity. It has demonstrated strong internal consistency in multiple studies (Kendzierski & DeCarlo, 1991). The first ten of the 18 items were included in the assessments (e.g., “I dislike it…I like it”, “I feel bored…I feel interested”, “I find it energizing…I find it tiring”) in order to promote brevity (see Kendzierski & DeCarlo, 1991 for the full scale). The ten-item version demonstrated strong internal consistency ($\alpha = .85$ at pre and $\alpha = .81$ at post).
**Perceptions of Autonomy Support.** Though not an explicit participant outcome of Pink Gloves Boxing, perceptions of trainers’ autonomy support was included in order to contribute to the understanding of how participants perceive the program’s implementation by instructors. It has been shown that teachers and instructors who support the autonomous motivation of those they are leading can influence participants’ persistence for and commitment to exercise (Hagger, Chatzisarantis, Hein, Pihu, Soós, & Karsai, 2007). Instructors in a physical activity setting can promote autonomy in exercisers by encouraging choice, providing a meaningful rationale for the activity, recognizing and acknowledging the challenges of physical activity, and by using language that does not pressure those who are being active (Chatzisarantis, Hagger, Wang, & Thogersen-Ntoumani, 2009), all of which can potentially be empowering for women. Hagger and colleagues’ (2007) Perceived Autonomy Support Scale for Exercise Settings (PASSES) was used to assess participants’ interpretations of their group fitness instructors’ instructional styles. The scale consists of 12 items (e.g., “The instructor provides me with positive feedback when I do the exercises in class,” “I feel I am able to share my experiences of the class with the instructor”) with responses ranging from 1 (strongly disagree) to 7 (strongly agree). It has shown strong reliability in a variety of populations (Chatzisarantis, et al., 2009; Hagger, et al., 2007) and in the present study (α = .95 at both time points).

**Implementation fidelity and adaptation scores.** In order to synthesize the qualitative implementation data with the data collected in the impact evaluation, an instrument was created using the categories of themes established in the coding process. Each theme was treated as a categorical variable, with the theme either present (scored 2), partially or somewhat present (scored 1) or not present (scored 0) at each location. For example, if instructors or participants at a given location referenced the “Define your what” goal-setting step in the manual, goal-setting
would be coded as present at that location. If they talked about setting goals, but did not explicitly use the manual and the “Define your what” step, they would be coded as a 1 for partially addressing that theme.

To assess fidelity, an overall implementation score for each of the three locations was calculated by summing the observed references to relevant categories established through the qualitative coding as related to program implementation (see Kaskowitz & Stallings, 1975). A separate adaptation score was created for references to categories that were not explicitly outlined in the PGB Manual that governs implementation (e.g., mindfulness); these scores were used to represent the extent to which sites adapted or modified the program. Adaptation scores were calculated by giving a site a rating of 1 if the modification was found to enhance the program. Modifications were rated as enhancing if it appeared to improve the experience of participants. A point was subtracted if the modification was found to detract from implementation. Therefore, higher scores reflect the use of adaptations that enhanced program implementation.

**Data Analysis.** Data were first screened to check for normality, outliers, and patterns of missing data. Descriptive statistics including means, standard deviations, bivariate and intraclass correlations, and internal consistency reliability scores (i.e., Cronbach’s α) were calculated for data at both time points. For additional descriptive purposes, cross-sectional MANOVAs comparing mean scores on each outcome variable at each time point for women in PGB and the comparison group of traditional fitness participants, as well as correlations between residual change scores for each outcome variable, were conducted.

To test if implementation fidelity predicts empowerment and related outcomes, residual change scores (Schutz, 1989) that control for baseline scores were calculated for all outcome...
variables and used in regression analyses. Residual change scores represent the extent to which someone changes more or less than expected given her initial score at baseline. Linear regressions were conducted using the implementation score variable to predict residual change scores for each outcome variable. Finally, linear regressions were conducted using the adaptation score to predict residual change scores for each outcome variable to explore how changes to implementation that enhanced the program relate to changes in desired outcomes. Given that implementation data was only collected at three locations, the remaining three sites were scored as missing for implementation and adaptation scores and were not included in the analysis.

Process Evaluation Results

Content Analysis

Results from the content analysis of the PGB Manual were grouped into two broad categories: Program Implementation and Empowerment. The majority of the manual is dedicated to the first category. Examples of program implementation include a detailed description of how the class should operate (i.e., format of the warm-up, circuit workout, and cool-down); descriptions alongside graphic depictions of the Tier System for both members and trainers; lists of punching combinations for each Tier; testing checklists regarding the physical, mental, and leadership skills that must be achieved in order to move to the next tier; and tools for members to track their progress.

Elements of the PGB manual that reflect empowerment occur primarily at the beginning of the manual. Three “tools of empowerment” are addressed: community, achievement, and fun. Following the discussion of the tools of empowerment are several goal-setting pages which encourage members to reflect on and “define” the “what,” “why,” and “how” of their goals. Additionally, the PGB Manual outlines ten “Core Habits” of PGB members that are intended to
guide the three tools of empowerment. These include Welcome with Open Arms, Be Confident
Yet Humble, Validate, Gift from the Heart, Make your own Fun, Live Now, Be a Little Weird,
Be a Millionaire of Smiles, Go the Extra Mile, and Set Goals that Make you Better. Members
and trainers are encouraged to reflect on these core habits to identify which habits resonate the
most and ways in which they can practice these habits in their daily lives.

Focus Groups and Interviews

Demographic information on all focus group and interview participants revealed that all
trainers and members identified as women. The majority of the sample was white. Though the
most of the sample was from the university setting, ages ranged widely because both
participating universities allowed participation from community (i.e., non-student) participants as
well as students. There was also diversity in PGB experience, as indicated by members’ reported
Tier (Table 1).

Table 1

Descriptive Statistics for Participants in Process Evaluation Focus Groups

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Race</th>
<th>Age M( SD)</th>
<th>PGB Tier (I – VII)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainer Focus Groups</td>
<td>4</td>
<td>4 White</td>
<td>27.75(2.87)</td>
<td>1 Tier III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 Tier IV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 Tier I</td>
</tr>
<tr>
<td>Member Focus Groups</td>
<td>3</td>
<td>3 White</td>
<td>23.33(2.31)</td>
<td>1 Tier III</td>
</tr>
<tr>
<td><strong>Site B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainer Focus Groups</td>
<td>8</td>
<td>8 White</td>
<td>27.88(7.77)</td>
<td>1 Tier IV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 Tier V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 Tier VI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 Tier VII</td>
</tr>
<tr>
<td>Member Focus Groups</td>
<td>7</td>
<td>7 White</td>
<td>30.86(12.01)</td>
<td>5 Tier II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 American Indian/</td>
<td></td>
<td>2 Tier III</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alaskan Native</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Several themes related to program implementation, the use of the PGB Manual, and the program’s empowerment objective emerged through focus groups with members and trainers, as well as interviews with program coordinators (Table 2; Appendix A provides additional quotations for each theme). Focus groups with both members and trainers revealed that there were challenges, as well as successes, associated with implementing the program. Many trainers and members expressed concern about trying to find balance with multiple tiers in one class. For example, one member felt she “didn’t feel as connected” to members in other tiers in her class. Another challenge that was mentioned multiple times was regarding trainers’ ability to give members instruction on skills outside of boxing (e.g., when members are doing push-ups in another station and the trainer is focused on holding for another member and therefore cannot give instruction or feedback to those doing push-ups). At locations that do not track attendance, both members and trainers expressed frustration with low or inconsistent attendance. Finally, some trainers mentioned that they occasionally have issues with members – the “one bad apple” that can set a negative tone or detract from the atmosphere trainers are trying to create.

Table 2

<table>
<thead>
<tr>
<th>Upper-level Categories</th>
<th>Lower-level Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Implementation</td>
<td>Challenges of implementation</td>
</tr>
<tr>
<td></td>
<td>Ease of implementation</td>
</tr>
<tr>
<td></td>
<td>Mixing tiers</td>
</tr>
<tr>
<td></td>
<td>Adaptation</td>
</tr>
<tr>
<td></td>
<td>Issues with patrons</td>
</tr>
</tbody>
</table>

---

Site C

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainer Focus Group</td>
<td>2 White</td>
<td>42.50(4.95)</td>
<td>2 Tier VII</td>
</tr>
<tr>
<td>Member Focus Group</td>
<td>4 White</td>
<td>34.46(6.32)</td>
<td>1 Tier I</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Tier II</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Tier IV</td>
</tr>
</tbody>
</table>
The Manual

- Attendance
- General opinions
- Frequency of use
- Challenges in use
- Autonomy in use
- Recommendations for change

The Workout

- General opinions
- Physical challenge
- Autonomy
- Diversity
- Working with others

Empowerment: Achievement

- General opinions
- Accomplishment
- Accountability

Empowerment: Community

- General community formation
- Community outside of class
- Class customs/traditions
- Support

Empowerment: Fun

- General opinions

Empowerment: Revealing the Champion™

- General opinions
- Challenges

Spirituality, Mindfulness, and Healing

- Spirituality & mindfulness
- Healing & self-care

Personal Change & Transformation

- General change
- Increased confidence

Dislike of traditional gyms/fitness

- Feelings of intimidation and judgment
- General dislike

Notes. Categories in italics represent those that emerged in addition to those related to program implementation and the PGB Manual.

Despite these challenges, many instructors mentioned the ease of implementing the class, given that they do not have to prepare the workouts ahead of time and that all they need to do is reference the binder of PGB workouts before class. They also expressed their comfort with adapting the workouts as they see fit: “If there’s certain exercises we want to work on…then we change it up a little bit so the circuit includes more of those exercises” (Renee⁵, Site C). When asked about the workout itself, members mentioned several successes. They appreciated the

---

⁵ Study participants’ names have been changed for privacy.
diversity and variety of the workouts (e.g., “We’re never constantly doing the same thing, which I think is fantastic” – Marie, Site A); the opportunity to choose options and go at their own pace (e.g., “You guys give us the tools and it’s what you make of it, because you could get a really hard work out and then also you can like skip around if you're feeling lazy” – Shelley, Site A); the ability to work with other women in the class (e.g., “I like being in partners…because I know that I don't push myself as much by myself as I do when I have someone there that's doing it with me” – Cheryl, Site A); and the physical challenge of the workout (e.g., “There's a real physically demanding part of this, but it's done in such a way that you can make it” – Renee, Site C).

As anticipated, themes emerged among trainers, members, and programmers regarding empowerment as operationalized in the PGB Manual (i.e., Community, Achievement, and Fun) (Table 2). The most widely and consistently expressed element was “community.” Many members expressed the deep sense of community they feel when in class, as if other members and trainers were like family (e.g., “They've actually become friends. They're a family. We're a family, maybe dysfunctional sometimes, but we're a family.” – Jamie, Site B). One key component to the sense of community experienced by members is the level of support they feel from others in the class and their trainers (e.g., “It's so nice to know that there's people there for you.” – Breanna, Site B). At all locations, members talked about having a sense of community with trainers and other members that extended outside the fitness studio. The sense of community “grows outside of PGB class, too,” (Jamie, Site B) where “everyone is just so willing to be like, ‘hey, let’s go out and have coffee’” (Breanna, Site B) and members “do a lot of functions together” (Jamie, Site B).

The sense of community experienced by members connects to the shared experience of accountability in setting and meeting goals. Members recognized that “it’s kind of cool to see
that other people have goals” (Marie, Site A) and that the act of “saying it out loud to a group of people makes you hold yourself more accountable…and makes you own that you want to do this” (Kelly, Site A). The “achievement” element of empowerment in PGB was evident not only in members’ discussion of accountability, but also when they talked about what they have accomplished in the program, such as in Jessica’s (Site C) assertion that “getting the gloves – that was a huge accomplishment…Huge.” In general, members expressed pride in their PGB accomplishments. They also expressed appreciation for trainers who create a non-competitive atmosphere that allowed everyone to challenge herself and create her own goals, regardless of her peers’ skills.

Finally, both members and trainers identified with the “fun” element of empowerment in PGB. For example, Gina (Site B), said “I think that’s cool because I think that, uh, [it’s] a more fun environment. We laugh and giggle and everything and carry on in here, whereas you can’t do that you know, in a normal [class].” In conversations with members, trainers, and the women who program PGB at each location, it was evident that those involved felt comfortable being themselves and found enjoyment and fun in PGB.

Interestingly, results were mixed regarding the frequency of use and perceived utility of the PGB Manual. At one location, few members had actually heard of the PGB Manual, while at another location trainers encouraged members to bring their manual to class each day, even though they used it infrequently. Universally, trainers and some long-time members expressed frustration with the frequency with which the PGB Manual is updated, such as Mari’s (Site A) belief that “it's really hard for trainers…to keep up with the manual. Yeah, for all the time that’s put into it I think it’s not as effective as [it could] be;” or Sarah’s (Site C) suggestion to “simplify the manual and don’t repeat it - or don’t improve it so much.” There was, however, general
approval of the current edition of the PGB Manual and a consensus that this version should be maintained.

Though the frequency of use of the PGB Manual across locations was mixed, trainers across sites referenced the importance of the PGB Manual at PGB Training Camp (i.e., a weekend-long training that certifies new trainers, allows current trainers to move up a tier in their certification, and encourages members to participate for a deeper understanding of the program). For example, according to Jessica (Site C), “we covered it a lot at [camp], but you just kind of glance at the manual in class.” It is apparent that the PGB Manual content is conveyed at Training Camp to trainers and those members in attendance, who then exercise autonomy in how they choose to use the manual while implementing class.

Finally, several themes emerged outside those related to program implementation and the PGB Manual. For example, at Site C, members and trainers expressed a sense of spirituality and mindfulness when participating in PGB, such as Sarah’s (Site C) belief that, “this place is sacred…it’s an active meditation.” Women at this location, as well as the other sites, also discussed how participation in PGB can be a form of self-care and healing, whether it’s “therapy…for my anxiety” (Carly, Site C) or a form of relief from mental illness (Breanna, Site B). Comments regarding how being in PGB class is therapeutic or healing were commonly made in the context of conversations about community and personal achievement. These discussions also often involved references and comparisons to other types of fitness classes, where women had more negative experiences. The juxtaposition between women’s experience with PGB and their experience working out on their own or taking traditional fitness classes occurred at all three locations, with women consistently expressing discomfort and frustration with traditional exercise experiences.
Observation and Participant Observation

Results from traditional observation and participant observation suggested implementation variability exists across locations. While content analysis of the PGB Manual shows that each PGB class should consist of a general warm-up, a specific warm-up focusing on boxing skills, a 5-station circuit workout (i.e., Total Body, Heavy Bags, Footwork, Shadowboxing, and Focus Mitts), and a cool-down with abdominal exercises, traditional observations revealed that each site demonstrated varying levels of autonomy in how they implement this structure. For example, Site A included a sixth station in the circuit devoted to abdominal work so the cool-down focused just on stretching. Trainers at Site C chose to include an extra cardiovascular-focused station based on the members’ requests and in order to give every member adequate one-on-one time with the trainer. Trainers also felt comfortable making changes to the circuit stations; for example, at Site B a trainer used additional equipment in the “Total Body” station to introduce the newer members (who were also new exercisers) to new equipment. Finally, Sites A and C included extra hitting work or (as one site referred to it) “challenges” at the conclusion of the traditional class, before cool-down. Participant observation revealed that at both locations, the extra work focused on building community, with members exercising in a circle while cheering for each other. The trainers at Site A specifically mentioned to members that the “challenge” activity was intended to prepare them for “test day,” which is when they complete a significant physical challenge to advance to the next tier.

There was also variability in the structure of the cool-down. As previously mentioned, Site A removed the abdominal work from this part of class. A key element outlined in the PGB Manual and training materials (i.e., the workouts provided to each location by PGB) is the PGB Question of the Day, which is meant to help members build community by sharing responses to
questions that range from silly (e.g., “Coffee or tea?”) to more thought-provoking (e.g., “If you could start any charity, what would it be and why?”). Interestingly, none of the locations asked the PGB question specified for that day’s workout. Instead, trainers encouraged members to ask questions, asked questions referring to the goal-setting elements of the PGB Manual, or asked a broad question about members’ academic experiences during that semester.

Finally, as demonstrated in the focus groups, there was clear variability in the use of the PGB Manual. While trainers at Site A asked members to get their manuals before the cool-down began in every observed class, trainers at Site B only did so with classes consisting of new members. At the third location, only members who had attended a training camp possessed a manual and manuals were not addressed. These differences in use of the PGB Manual observed at each location align with the varied responses in the focus groups and interviews.

**Impact Evaluation Results**

Data screening was conducted to assess the data for assumptions of normality and outliers. Assumptions of normality were met and Little’s MCAR test verified that both pre- and post-data were missing at random ($\chi^2 = 3970.66$, DF = 4455, Sig = 1.00; $\chi^2 = 1173.75$, DF = 1113, Sig. = .10), so missing data (0.32% of values at pre-test and 0.50% of values at post-test) were imputed using expectation maximization. Of those who completed the first survey ($N = 149$), 57 completed the follow up, with 22 participating in PGB and 35 in traditional fitness classes. Participants who completed both assessments were primarily white ($n = 50$) and were either in college ($n = 17$) or had completed college ($n = 10$) or were working on or completed graduate work ($n = 27$). Ages ranged from 18 to 67, with 18 women between the ages of 18 and 22, 17 between 23 and 29, 10 in their 30s, 3 in their 40s, 6 in their 50s, and 3 in their 60s. Chi-square analyses comparing groups in age, race, education, and employment revealed no
significant differences between those in PGB \((n = 22)\) and those in traditional fitness classes \((n = 35)\). Descriptive statistics and correlations were calculated to describe the sample (Table 3). In general, all respondents scored at least average or above average on all measures and all correlations were in theoretically consistent directions. Internal consistency reliability was calculated using Cronbach’s alpha and all measures presented acceptable reliability at both time points \((\alpha > .80)\).

Table 3

| Correlations and Descriptive Statistics for Pre- and Post-Test \((N = 57)\) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 1               | 2               | 3               | 4               | 5               | 6               | 7               | 8               | 9               |
| 1 Empowerment   | .69**           | .62**           | .23**           | .14             | .10             | .15             | .05             | .12             |                 |
| 2 Autonomy Support | .57**         | .63**           | .31**           | .14             | .31**           | .24**           | .03             | .00             | .07             |
| 3 Self-Efficacy | .19*           | .14             | .49**           | .14             | .38**           | .19*           | .07             | .27**           |                 |
| 4 Enjoyment     | .22**           | .34**           | .10             | .20*           | .04             | .02             | .07             | .05             |                 |
| 5 Self-Compassion | .20*          | .24**           | .15             | .11             | .78**           | .20*           | .22*           | .23*           | .25*           |
| 6 Fitness Goals | .17*           | .14             | .43**           | .05             | .25**           | .77**           | .61**           | .47**           | .84**           |
| 7 Personal Goals | .22**          | .16             | .27**           | .08             | .29**           | .57**           | .41**           | .63**           | .88**           |
| 8 Professional Goals | .05           | .02             | .15             | .06             | .25**           | .42**           | .70**           | .71**           | .81**           |
| 9 Goal Setting  | .18*           | .13             | .35**           | .08             | .31**           | .81**           | .90**           | .82**           | .70**           |

<table>
<thead>
<tr>
<th>Range</th>
<th>1-5</th>
<th>1-7</th>
<th>1-10</th>
<th>1-7</th>
<th>1-5</th>
<th>1-5</th>
<th>1-5</th>
<th>1-5</th>
<th>1-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>M(_1)</td>
<td>4.39</td>
<td>6.12</td>
<td>5.87</td>
<td>5.63</td>
<td>3.20</td>
<td>3.94</td>
<td>3.98</td>
<td>4.18</td>
<td>4.03</td>
</tr>
<tr>
<td>SD(_1)</td>
<td>0.57</td>
<td>0.90</td>
<td>1.58</td>
<td>1.19</td>
<td>0.70</td>
<td>0.87</td>
<td>0.84</td>
<td>0.75</td>
<td>0.69</td>
</tr>
<tr>
<td>M(_2)</td>
<td>4.34</td>
<td>6.07</td>
<td>6.01</td>
<td>5.41</td>
<td>3.19</td>
<td>3.90</td>
<td>3.89</td>
<td>4.06</td>
<td>3.95</td>
</tr>
<tr>
<td>SD(_2)</td>
<td>0.69</td>
<td>0.90</td>
<td>1.68</td>
<td>1.10</td>
<td>0.60</td>
<td>0.86</td>
<td>0.77</td>
<td>0.73</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Notes. Time one correlation values are below diagonal, time two correlation values are above diagonal; intraclass correlations are in bold on the diagonal; *\(p < .05\), **\(p < .01\) (2-tailed).

Bivariate correlations using residual change scores (i.e., change that occurs after controlling for values at time one) indicated that change in autonomy support was positively related to changes on the empowerment in exercise scale, as well as the self-efficacy for exercise scale, and that change in empowerment in exercise positively was related to change in self-
efficacy (Table 4). Additionally, all items measuring goals were significantly positively related. There were no significant relationships involving enjoyment or self-compassion.

Table 4

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Empowerment</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Autonomy Support</td>
<td>.52**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Self-Efficacy</td>
<td>.302*</td>
<td>.40**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Enjoyment</td>
<td>.02</td>
<td>.07</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Self-Compassion</td>
<td>-.06</td>
<td>.09</td>
<td>-.01</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Fitness Goals</td>
<td>.03</td>
<td>.04</td>
<td>.24</td>
<td>-.01</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Personal Goals</td>
<td>.08</td>
<td>-.10</td>
<td>-.02</td>
<td>-.18</td>
<td>.18</td>
<td>.52**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Professional Goals</td>
<td>-.01</td>
<td>-.17</td>
<td>.06</td>
<td>.01</td>
<td>.12</td>
<td>.37**</td>
<td>.38**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Goal Setting</td>
<td>.04</td>
<td>-.10</td>
<td>.12</td>
<td>-.09</td>
<td>.21</td>
<td>.79**</td>
<td>.85**</td>
<td>.68**</td>
<td></td>
</tr>
</tbody>
</table>

Notes. ** = p < .01, * = p < .05

Results of the cross-sectional MANOVAs comparing women in PGB with women in traditional fitness classes showed that women in PGB were more empowered at pre- \( F(1, 147) = 12.37, p = .001, \eta_p^2 = .08 \) and at post-test \( F(1, 121) = 8.76, p = .004, \eta_p^2 = .07 \) compared to women in traditional fitness classes. Women in PGB also had higher perceptions of autonomy support at both pre- \( F(1, 147) = 10.56, p = .001, \eta_p^2 = .07 \) and post-test \( F(1, 121) = 11.05, p = .001, \eta_p^2 = .08 \). In order to explore the high levels of empowerment in the PGB subsample, the MANOVAs were repeated with only PGB members, using PGB Tier (i.e., time spent in the program) as the fixed-factor. Women in tiers 5, 6, and 7 (i.e., at least two years of experience) had significantly higher mean empowerment scores that those in the lower tiers (1-4) at time one.
Implementation and adaptation scores were calculated for each location. Site B had the highest implementation score (15/16). Site A scored an eleven, while Site C scored a ten. Site C, which had the lowest implementation score, had the highest adaptation score of four, while sites A and B each had a score of one. Table 5 displays the results of the regression analyses using implementation scores to predict residual change in each outcome. Results show that fidelity of implementation for PGB programs negatively predicted members’ perception of trainer autonomy support ($\beta = -0.65, p < .01$). In other words, as a site’s implementation score increased, members’ perceptions of autonomy support declined. Similarly, implementation scores also significantly predicted whether or not members set fitness-related goals, ($\beta = -0.64, p < .01$). The negative beta coefficient indicates that the stronger a site’s implementation fidelity, the less likely women in the class were to set goals related to their personal fitness. Separate regressions using adaptation scores to predict residual change showed that adaptation positively predicted member enjoyment ($\beta = 0.26, p < .05$), so making changes to program implementation that enhance its delivery was positively related to increases in members’ enjoyment of the physical activity. Implementation and adaptation scores did not predict change in other outcomes.
Table 5

Linear Regression of Implementation Scores Predicting Residual Change in Outcome Variables

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$F$</td>
</tr>
<tr>
<td>Empowerment</td>
<td>0.63</td>
</tr>
<tr>
<td>Autonomy Support</td>
<td>12.33**</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>0.01</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>0.47</td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>0.52</td>
</tr>
<tr>
<td>Fitness Goals</td>
<td>11.91**</td>
</tr>
<tr>
<td>Personal Goals</td>
<td>0.18</td>
</tr>
<tr>
<td>Professional Goals</td>
<td>1.23</td>
</tr>
<tr>
<td>Goal Setting</td>
<td>2.51</td>
</tr>
</tbody>
</table>

*Notes.* ** = $p < .01$, degrees of freedom for all analyses = 1, 17

**Discussion**

This study integrated process and impact evaluations to examine how the implementation of Pink Gloves Boxing, as outlined in the program’s manual, influenced the program’s objective of empowering women. Observations, interviews, and focus groups were conducted to evaluate program implementation, with the primary evaluation aim of assessing use of and fidelity or adaptation to implementation as specified in the manual. Qualitative findings were integrated with quantitative results from an impact evaluation assessing the extent to which PGB is empowering women compared to traditional fitness classes. The results of this integrative evaluation study have important theoretical and practical implications for empowering women through physical activity.
Results of the process evaluation indicate variability in the use of the manual and, to a lesser extent, variability in how the class is implemented. However, despite the differences across locations in use of the manual and implementation, results of the impact analysis indicated that women in PGB are experiencing some elements of empowerment. Cross-sectional results for the Empowerment in Exercise Scale (EES; Moore & Fry, 2014) indicated that at both time points, women in PGB are more empowered than those in traditional group fitness classes. Examining the role of previous experience demonstrates that, at the start of the analysis, women in higher tiers of PGB (i.e., those who had been in the program for multiple semesters in the university system or years in the health club system) had higher scores on the EES than women in the lower four tiers, which could explain why empowerment was high at both pre- and post-test. Additionally, as a new scale, though the five-item EES represents an important step in measuring empowerment in this setting, it does not capture the full picture of empowerment as outlined in the EPM. The scale was designed in order to assess how empowerment can occur in caring and positive exercise climates and the authors do not provide a theoretically grounded definition of empowerment; thus, it does not capture the full construct. Future research would benefit from use of a more comprehensive scale.

This study attempted to address this gap by using the EPM to inform the selection of multiple measures. Results of the residual change score correlations provide support for the EPM as change in all goal-setting subscales (i.e., fitness-, personal-, and professional-related goals) were significantly strongly and positively correlated with each other, and self-efficacy for exercise and empowerment in exercise were significantly strongly and positively correlated. The additional significant correlation of perceptions of autonomy support with both self-efficacy and empowerment outcomes suggests that perhaps the EPM can be further expanded to capture the
important role that supporting perceptions of autonomy play in the pursuit of empowerment. PGB’s inclusion of “fun” as a component of empowerment was not supported, as enjoyment did not relate to change in any other outcome. This suggests that, while potentially important for other outcomes related to physical activity (e.g., motivation and/or adherence), enjoyment may not be necessary to facilitate empowerment in this setting. It is clear the multidimensional, higher-order nature of empowerment (Peterson, 2014) requires further research to identify possible relevant first-order components. Future research regarding empowerment in physical activity would benefit from identifying relevant components to empowerment in this context and the formation of a reliable and valid instrument for its measurement.

One framework that can explain the enhanced cross-sectional empowerment among women in PGB is self-determination theory (Ryan & Deci, 2000, SDT), which has been used extensively in physical activity settings (Van den Berghe, Vansteenkiste, Gardon, Kirk, & Haerens, 2014; Standage & Ryan, 2012). The basic psychological needs theory sub-theory of SDT posits that satisfying the basic need of autonomy (in addition to competence and relatedness) leads to more self-determined forms of motivation and, in turn, improvements in physical and psychological well-being (Deci & Ryan, 2000). SDT posits that autonomy supportive contexts are necessary to facilitate improvements in psychological outcomes, one of which may be empowerment. The link between empowerment and autonomy supportive environments in physical activity contexts has not been thoroughly investigated; however, the theoretical link has been established in other settings (Stone, Deci, & Ryan, 2008; Brooks & Young, 2011). Results of this study regarding members’ perceptions of autonomy support are mixed and deserve further study. Cross-sectional findings indicated that members of PGB have higher perceptions of autonomy support at both time points, suggesting that, in general, PGB
trainers may create a more autonomy supportive environment than instructors of traditional formats. In other words, trainers who acknowledge the perspective of members, provide opportunities for members to make decisions, and minimize the pressure to perform to a certain level can enhance perceptions of autonomy support (Edmonds, Ntoumanis, & Duda, 2008). This becomes especially important in the context of PGB, as it has been shown that in learning environments where instructors are more autonomy supportive, students tend to internalize the values being presented (Williams & Deci, 1996), which suggests that members of PGB can internalize the values of the program (i.e., the ten “Core Habits” and the three “Tools of Empowerment”).

Interestingly, results of the regressions using implementation fidelity to predict residual change in perceptions of autonomy support suggest that at locations with higher implementation fidelity, members’ perceptions of trainers’ autonomy support was lower. It is possible that in an effort to have high implementation fidelity, trainers lose focus on promoting autonomy supportive elements of instruction. Research on autonomy support in traditional classrooms suggests that external pressures can lead teachers to rely on more controlled forms of instruction, as opposed to more creative, autonomy-supportive techniques (Niemiec & Ryan, 2009). It could be that the external pressure of feeling obligated to closely follow the PGB Manual thwarts instructors’ ability to be autonomy supportive. Trainers’ feedback during focus groups provides some support for this, as some mentioned that the manual takes up too much instruction time and that it is most useful in training camps where there is significant time to devote to the manual. Thus, those trainers who choose to use the PGB Manual may sacrifice some autonomy supportive behaviors, while those who do not use the manual frequently have more flexibility and opportunity for practicing a more autonomy supportive form of instruction. Future research
should build on this theoretical link between empowerment and autonomy support in physical activity contexts to determine how instructors can create environments that support members’ empowerment.

In addition to providing initial evidence for how women can be empowered in physical activity contexts, this study provides important contributions to the body of literature on program evaluation, specifically the evaluation of physical activity programs for women. Employing mixed methods research allows researchers to answer more complex research questions and provides stronger evidence through the integration of quantitative and qualitative results (Johnson & Onwuegbuzie, 2004). Further, the integration of two forms of evaluation provides a more comprehensive picture of not only the how and why of program implementation, but also the what, or outcomes, of the program (Patton, 2015; Bamberger et al., 2008). The limited research on empowerment and physical activity for adult women fails to take this comprehensive approach, primarily focusing on program outcomes without addressing how the process of implementation relates to the outcome results.

Additionally, the inclusion of adaptation as a valuable implementation component for evaluation is important for producing a more comprehensive understanding of program implementation (Berkel, et al., 2011). There is a clear tension between fidelity and adaptation in many evaluation settings (e.g., Dusenbury, Brannigan, Falco, & Hansen, 2003). Past research has articulated a concern regarding adaptation during implementation as something that reduces the program’s potential effectiveness (Elliot & Mihalic, 2004); however, more recent perspectives place value on adaptation as a mechanism employed by instructors based on their knowledge of the population, as opposed to simply implementing the program incorrectly (Castro, Barrera, & Martinez, 2004; Berkel, et al., 2011). Though adaptation may be less useful in other settings, in
the case of PGB, adaptation is exceptionally important, as member demographics can vary significantly depending on the setting (e.g., private gym versus university program). Adaptations to programs that are informed by the participating population can enhance “buy-in” and sustain participation (Castro, et al., 2004). Qualitative results of this study indicate that, though the PGB curriculum aligns well with the EPM, the program was not grounded in theory when it was developed. The absence of a theoretically grounded program design may be a possible explanation for the positive implications of adaptation and the negative implications of fidelity. Though this study only found adaptation to predict change in enjoyment, its inclusion is still valuable because it considers the perspectives of individual PGB communities and instructors’ decisions to modify based on their group’s needs.

**Limitations and Future Research**

As with any real-world evaluation, this study had several limitations. Though randomized control trials provide the most accurate and reliable findings in impact evaluation, this study was constrained to rely on convenience sampling for both the PGB and comparison groups. Additionally, though response rates were relatively high at both time points, few participants took both questionnaires, resulting in a small longitudinal sample size with limited power to detect change over time. This also suggests some potential selection biases. It is possible that there is some bias in those who opted into not only the study, but PGB itself; the unique format may be appealing to some, but unappealing to others. Attrition could be explained by the fact that some women may not be interested in socializing during their workout time and found the community and social engagement of PGB disagreeable. Future research with a larger sample would benefit from more sophisticated data analyses, such as multi-level modeling. Finally, the researcher’s intimate knowledge of the program and several of the study participants poses one
potential study limitation. It is possible that some of the qualitative results suffered from a response bias, as participants may have felt the need to answer in a specific way or felt hesitant to provide too much “negative” feedback about the program. Future research would benefit from a larger research team with more diverse perspectives.

**Conclusion**

Using an integrated process and impact evaluation, this study addressed existing gaps in research regarding women’s empowerment through physical activity by investigating the implementation and outcomes of a unique, empowerment-focused women’s only group fitness class. Despite limited power, results indicate that fitness classes that facilitate a sense of community and support among participants can be empowering for adult women. Additionally, findings support the efficacy of mixed methods evaluations that integrate both process and impact evaluation techniques and that incorporate both measures of fidelity and adaptation.
MANUSCRIPT 3: Exploring Empowerment for Sexual Assault Victims in Women’s Only Group Fitness

The prevalence of sexual violence in the United States is well documented, with nearly one in five women reported to have been raped in their lifetimes (Black, et al., 2011). Other studies have consistently shown that between 13% and 25% of women in the U.S. will experience some form of sexual assault in their lives (Elliot, Mok, & Briere, 2004; Frazier, Mortensen, & Steward, 2005). Empowerment is a primary goal of many support services for victims (Kasturirangan, 2008), though many barriers exist for formal support seeking (Sable, Danis, Mauzy, & Gallagher, 2006; Ullman & Filipas, 2001). Thus, it is valuable to investigate how female victims of sexual violence may be empowered in other, less formal contexts. This study explores how empowerment can occur for victims participating in a structured physical activity program, which, though not a formally organized support service for victims of sexual violence, can provide a supportive community and opportunity for physical achievement that can empower participants.

Empowerment

Empowerment is a complex, multi-dimensional construct that operates as both a process and an outcome for a variety of populations in a variety of contexts (Hur, 2006; Peterson, 2014; Cattaneo, Calton, & Brodsky, 2014). Broadly speaking, empowerment is the process by which individuals and communities work to gain control and power over their own circumstances (Rappaport, 1987). Its definitional origins are rooted in the work of Freire (1970), whose concept of critical consciousness calls for recognizing sources of inequality and oppression in order to achieve social justice and promote individual and community efficacy. More specifically, Zimmerman’s (1995) nomological network posits that psychological empowerment consists of
intrapersonal, interactional, and behavioral components, which have been characterized as emotional, cognitive, and relational elements, respectively (Christens, Peterson, & Speer, 2014).

Despite being frequently cited as a process and key outcome in a variety of fields (see Hur, 2006), the construct has been criticized for its overuse and, consequently, its definitional dilution. Riger’s (1993) early critique focused on the role of power, arguing that researchers conflate actual empowerment with a “sense” of empowerment, which fails to consider different conceptualizations of power (i.e., power over, power to, and power from). Cattaneo and colleagues (2014) also address the issue of power, suggesting that existing research fails to consider the dynamic relationship between power at the individual and societal levels. Additional critiques address the absence of relevant or personally meaningful goal orientations in empowerment (Cattaneo et al., 2014), as well as neo-liberal over-emphasis on individual empowerment (Woodall, et al., 2012), which dilutes its original conceptualization rooted in critical consciousness (Freire, 1970). In response to critiques of empowerment (Woodall, et al., 2012), Christens (2013) cautions against using individual empowerment interchangeably with psychological empowerment. The latter takes into consideration both the important role of context and the multi-level nature of empowerment. Cattaneo and colleagues (2014) advocate for the continued use of empowerment in research, as long as it takes into account the importance and multi-level nature of power, and the need for programs and interventions to be personally meaningful to specific populations.

In order to simultaneously address critiques and synthesize the existing work on empowerment theory, Cattaneo and colleagues (2010; 2015) developed the Empowerment Process Model (EPM, Figure 1), under which empowerment is defined as “an iterative process in which a person who lacks power sets a personally meaningful goal oriented toward increasing
power, takes action toward that goal, and observes and reflects on the impact of this action, drawing on his or her evolving self-efficacy, knowledge, and competence related to the goal” (p. 647). In addition, they argue that social context influences all components of this process and the relationships between them. The EPM is employed to understand empowerment in this study because it addresses significant gaps in empowerment research (e.g., the need for relevance and the dynamic relationship between individual and community levels of empowerment) and has been used reliably with victims of domestic violence, which suggests the model is appropriate for understanding empowerment for victims of gender-based violence.

Figure 1. Cattaneo and Colleagues’ (2010; 2015) Empowerment Process Model

Sexual Assault Victimization
Similar to research regarding empowerment, the definitional and methodological challenges associated with studying violence against women are well documented. There are several barriers that are unique to measuring victimization (DeKeseredy & Schwartz, 2011; Jaquier, Johnson, & Fisher, 2011; Fisher, Daigle, & Cullen, 2010; Koss, et al., 2007), as disclosure “is inhibited by stigma, widespread beliefs that it is shameful, and cultural norms” that blame victims for their own assault (Koss, et al., 2007, p. 363). Comprehensive and behavior-specific definitions of sexual violence can improve rates of underreporting and provide a more accurate picture of violence towards women (Koss, et al., 2007, Fisher, et al., 2010; DeKeseredy & Schwartz, 2011; Russell, 1982). Fisher and colleagues (2010) define sexual victimization as “acts with sexual purpose or content that violates women’s bodies and/or minds [which includes] rape and sexual assault, a term reserved for unwanted sexual contact that does not involve penetration.” Such acts can be “attempted, completed, or threatened” (p. 3). Given the recognized importance of behavior-specific language (Fisher, et al., 2010; Koss, et al., 2007), this comprehensive definition governs the present study.

Scholars use numerous theories to explain the presence of violence towards women (DeKeseredy & Schwartz, 2011). One widely used explanation is through the lens of feminist theory. Though there are several interpretations and definitions of feminist theory (see Lorber, 2010), many emphasize the role of the patriarchy, which refers to the institutionalized gendered order that places women as subordinate to men. The patriarchal system is reinforced by a gender ideology that privileges men in all spheres of public and private life. Through this lens, violence against women stems from a socially ingrained male desire to maintain power and control over women (DeKeseredy & Schwartz, 2011; LaViolette & Barnett, 2000).
An additional prominent perspective for understanding violence against women is an ecological model, which explains how different levels of personal and environmental factors interact to lead to violence against women (Bronfenbrenner, 1977; Heise, 1998; Campbell & Townsend, 2011). The ecological framework proposes that integration of individual differences, relationships between individuals and their immediate surroundings, informal and formal social structures, and overarching cultural values and laws is needed to provide a comprehensive explanation for violence against women. Heise (1998) proposes an ecological framework that views violence as a multifaceted phenomenon influenced by social, personal, and situational contexts. Therefore, this study integrates feminist and ecological explanations of sexual violence with the EPM to examine empowerment as an outcome and process for victims of sexual violence. This framework grounds the definition of empowerment in a comprehensive and thorough model while acknowledging the important role of feminist perspectives of power and control. It also recognizes the ecological emphasis on how the interaction of individual differences and environments can lead to violence against women.

**Empowering Victims of Sexual Assault Through Physical Activity**

Empowerment is a key outcome of services and programs intended to support victims of violence (Cattaneo & Goodman, 2015; Kasturirangan, 2008; Cattaneo & Chapman, 2010). Given the well-documented impact of sexual violence on female victims (Campbell, Dworkin, & Cabral, 2009; Resick, 1993; Koss, 1993), it is understandable that empowerment is a main focus of formal support services. Victimization is significantly associated with a variety of mental health issues including fear, anxiety, substance abuse, and post-traumatic stress disorder (PTSD; see Resick, 1993; Campbell & Wasco, 2005; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). Studies have identified significant physical health effects of sexual violence, ranging from
gastrointestinal and cardiopulmonary issues to gynecological and muscular or skeletal problems (see Campbell & Townsend, 2011). Recent work has demonstrated links between the negative psychological and physical health impacts of sexual violence. Specifically, victims’ PTSD symptoms have been shown to either partially or fully mediate the relationship between sexual assault severity and physical health (Eadie, Runtz, & Spencer-Rodgers, 2008; Campbell, Greeson, Bybee, & Raja, 2008).

Despite the presence of support services that aim to empower and support victims, there is evidence of limited use of services by victims over time (Ullman, 2007; Ullman & Townsend, 2008). An ecological perspective suggests that individual characteristics of the victim, the assault experience, and formal and informal responses to the assault can all contribute to creating barriers to victims’ pursuit of support services following an assault (Campbell et al., 2009; Ullman, 2007). Given such barriers, there is potential opportunity for women to seek support in informal settings (i.e., those that are not clinical interventions or crisis centers) that may not necessarily be specifically intended for advocacy. Organized and intentionally structured physical activity settings may provide one informal context for victims to find empowerment. Successful advocacy for and empowerment of victims is not necessarily dependent on clinical training or expertise. Ullman (2007) identifies characteristics such as being supportive, empathetic, and genuine as the important components for settings that support victims, while others call for more emotionally supportive care for victims outside of traditional mental health services (Campbell and Wasco, 2005). Combined with Cattaneo and colleagues’ (2014) emphasis on the importance of personally relevant empowerment goals, this suggests that exploring other, non-traditional settings that are personally meaningful for victims’ empowerment may warrant further exploration. Organized physical activity programming, such
as group exercise classes, has the potential to be personally meaningful while providing supportive communities that can empower participants who have experienced sexual violence.

The physiological benefits of physical activity and exercise are widely known (U.S. Department of Health and Human Services, 2008; Reiner, Niermann, Jekauc, & Woll, 2013); however, in addition to reducing the risk of cardiovascular related disease, many forms of cancer, and improving overall physical wellbeing, physical activity also has several important psycho-social benefits. Physical activity has been known to reduce anxiety and depression in women (O’Dougherty, Hearst, Syed, Kurzer, & Schmitz, 2012; Asztalos, De Bourdeaudhuij, & Cardon, 2010), while improving emotional wellbeing (Hogan, Catalino, Mata, & Fredrickson, 2015) and general emotional health (Kull, 2002). These beneficial outcomes are especially relevant for victims of sexual violence, whose experiences increase the likelihood of negative physical and mental health (Campbell & Townsend, 2011).

Unfortunately, though it is recognized that physical activity and sport can be used as a mechanism for empowering women and girls (Kirk, 2012), existing research on empowerment in physical activity is limited and subject to the same issues regarding empowerment research in other fields (Cole, for publication). For example, Henderson and Ainsworth (2003) found that African American and American Indian women felt empowered due to the support systems they experienced during physical activity, though at no point is empowerment clearly operationalized or defined and the physical activity participation is diverse and unstructured. Similarly, Segar and colleagues (2002) describe a cognitive-behavioral physical activity intervention that included Freire’s (1970) Empowerment Theory in its design by integrating consciousness-raising sessions; however, actual empowerment was not measured. Empowerment has also been conceptualized
as a dimension of closeness between athletes and coaches, suggesting that the construct has important implications for interpersonal relationships in physical activity contexts (Lavoi, 2007).

Röger and colleagues’ (2011) evaluated a physical activity program that focused on the inclusion of participants at all levels of the program’s development and implementation. They used Zimmerman’s nomological network to inform questions in qualitative interviews with “socially disadvantaged” women who participated in the program, finding that all women experienced some level of empowerment, but those who were most active in the design, implementation, and participation in the intervention experienced the most. Their findings that participation in structured physical activity programs, where individuals learn new skills and develop feelings of competence feel empowered, provide initial evidence to support the value of using structured physical activity as a vehicle for empowering vulnerable groups of women. Additionally, though their study looked specifically at sport participation, Blinde and colleagues (1993) used Rappaport’s early definition of empowerment alongside self-efficacy theory to identify bodily competence, perceptions of a confident self, and a proactive approach to life’s challenges as elements of personal empowerment. They argue that sport participation allows women to gain a sense of control of their lives, and that this sense can be translated outside of the physical activity context.

Moore and Fry (2014) developed a five-item scale to measure empowerment in exercise settings using a definition of empowerment as “participants’ increased sense of their ability to control and reach their physical fitness and health potential through continued exercise, including transference [of] benefits from their current exercise class experience” (p. 138). They hypothesized that when college exercisers perceived the exercise climate as supportive and caring, they would be more likely to perceive themselves as empowered to make decisions
regarding their personal health and wellbeing. Though their work does not provide a theoretically grounded definition of empowerment, they found strong psychometric support for their Empowerment in Exercise Scale, which represents an important first step in quantitatively assessing empowerment in physical activity and exercise contexts.

Cumulatively, these studies suggest that physical activity settings have the potential to empower participants, but that further work is needed to more fully assess a theoretically grounded understanding of empowerment, especially for women who are victims of sexual violence. As in much of the existing empowerment literature, the discourse of empowerment in physical activity contexts is not without limitations. Primarily, it speaks almost exclusively to experiencing an insufficiently defined “sense” of empowerment, as opposed to the actual achievement of power-oriented and personally meaningful goals (Cattaneo, et al., 2014). In settings that seek to empower victims of sexual violence, this distinction is exceptionally important (Cattaneo & Goodman, 2015). There is also little comprehensive discussion regarding what particular elements of physical activity can be empowering. For physical activity and sport programs to have a positive impact, they must be intentionally programmed and structured to maximize those benefits (Coakley, 2014), and existing work on empowerment through organized physical activity fails to make this component explicit. Therefore, examination of what elements of intentionally programmed physical activity opportunities can facilitate actual empowerment for victims of sexual violence (as articulated by the EPM) is needed.

This Study

This study examines how one such intentionally structured group exercise program, Pink Gloves Boxing, can empower victims of sexual assault. Pink Gloves Boxing (PGB) is a group fitness class for women that operates based on a standardized curriculum and program manual at
universities and clubs across the United States and Europe. According to the PGB Manual, the main objective is to empower PGB members through the three “tools of empowerment”: community, achievement, and fun. The program also articulates ten “Core Habits” (i.e., Welcome with Open Arms, Be Confident Yet Humble, Validate, Gift from the Heart, Make your own Fun, Live Now, Be a Little Weird, Be a Millionaire of Smiles, Go the Extra Mile, and Set Goals that Make you Better), which are intended to guide the empowerment process. The program operates on a Tier System, through which members advance by learning and demonstrating different physical, mental, and leadership skills specific to each level. Every class is structured with a predictable and skill-specific format, including either circuit training or high-intensity interval training, depending on the tier. During the cool down component of each workout, members share the goals they have written down in their manuals, as well as the reasons for their goals and their plans to achieve them (i.e., defining the what, why, and how of their goals). PGB Trainers, who all attend a Training Camp to get certified, are trained in how to facilitate these conversations so that they occur in a supportive and safe environment.

Pink Gloves Boxing differs from traditional group fitness classes in several important ways that are relevant to this study. First, the standardized curriculum and Tier System ensures that members demonstrate competence in progressively advanced boxing skills before moving on to learn new skills, which allows them to build self-efficacy. Second, though the emphasis on empowerment may not be unique, the standardized processes, specifically in the form of goal setting and accountability, are. Finally, the Core Habits that guide the program promote the formation of a community that allows women to embrace each other (e.g., Welcome with Open Arms), be themselves (e.g., Be a Little Weird), set meaningful goals (e.g., Set Goals that Make you Better), and enjoy themselves while they do it (e.g., Make your own Fun). This community,
along with the emphasis on gaining new skills, feeling competent and efficacious, and the facilitated goal setting and reflection process aligns the program well with the EPM.

This study examines if an intentionally designed and community-oriented fitness class for women can empower victims of sexual assault, compared to traditional fitness classes. Specifically, integration of feminist and ecological perspectives are used to argue that a non-traditional group exercise context that promotes supportive community in conjunction with the opportunity to feel power and control by learning physical skills can be empowering for victims of sexual violence. The Empowerment Process Model serves as a framework for measuring empowerment (which is comprehensively assessed through the measures of self-efficacy, empowerment in exercise, and goal-setting) among female victims and non-victims in PGB and traditional group fitness programs. Additional constructs were included as potential components of empowerment that could be relevant to victims (e.g., self-compassion) and to capture PGB’s operationalization of empowerment (e.g., enjoyment). Given PGB’s unique emphasis on empowerment in the form of community, achievement, and fun, it was hypothesized that victims of sexual violence who participate in PGB would experience greater empowerment than women who have experienced victimization and participate in traditional group fitness programs.

Methods

Participants and Procedures

This study used cross-sectional data from a larger longitudinal evaluation of PGB. Participants \((N = 149)\) were recruited in two main ways. First, a purposive sample of women registered for Pink Gloves Boxing were recruited via email and social media from university and health club locations across the country. Second, a convenience sample of women participating in traditional group fitness classes at a large university were recruited for a comparison group.
Women from six PGB locations, two of which were university-based programs, participated. Data were collected via an online questionnaire that was administered at the beginning of the university semester. IRB approval was granted for this research project by the author’s institution.

**Measures**

**Empowerment.** There are few reliable and valid measures of empowerment that are both context- or population-specific (Peterson, 2014; Hunter, Jason, & Keys, 2013; Herbert, Gagnon, Rennick, & O’Loughlin, 2009). Thus, the EPM was used as a framework for selecting several context-specific measurements to comprehensively assess empowerment as operationalized in the model. The Empowerment in Exercise Scale (EES, Moore & Fry, 2014) was recently developed to assess individuals’ knowledge and confidence to participate in physical activity. It consists of five Likert-scale items (e.g., “My confidence to do this activity on my own has increased,” “My knowledge of this activity has increased”), ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has demonstrated strong internal consistency in previous research ($\alpha = .89$) and in this study ($\alpha = .84$). The Self-Efficacy for Exercise Scale (SEE, Resnick & Jenkins, 2000) was used to address the self-efficacy component of the EPM. The SEE consists of nine items (e.g., “if the weather was bothering you,” “if you did not enjoy it”) asking respondents to rank their confidence to exercise from 1 (not confident) to 10 (very confident). Resnick and Jenkins (2000) found acceptable internal consistency for the scale with older adults and it showed strong reliability in the present study ($\alpha = .87$).

Finally, several items were generated to address the goal-setting component of the EPM. Respondents were asked how much they agree with twelve Likert-scaled items, which were created to assess general goal setting (“I set goals regarding my physical fitness and health”),
acting on goals (“I act on the goals I set regarding my professional life”), reflecting on goal setting (“I reflect on the impact of my actions when trying to meet my personal life goals”), and re-evaluating goals (“I re-evaluate the physical fitness and health goals I set for myself”) within physical fitness and health, personal, and professional contexts. Mean scores for each context subscale were calculated in addition to a total mean score for all goal items. Mean scores showed acceptable reliability as both context-specific subscales (α ranging from .84 to .88), and as a total score (α = .90).

**Self-Compassion.** In addition to the measures intended to represent the EPM, other scales were included to explore potential related outcomes. Self-compassion refers to the ability to be mindfully aware and to practice nonjudgmental self-kindness in times of pain and suffering, while recognizing that pain is part of the larger human experience (Neff, 2003a). Self-compassion promotes resilience, which is an important characteristic to consider with victims of sexual assault. Neff’s (2003b) 26-item Self-Compassion Scale (SCS) consists of six subscales that represent three opposing elements of self-compassion (i.e., self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification). The total score is calculated by reverse scoring the negatively oriented subscales and calculating a mean score, which has shown strong reliability in previous research (see Neff, 2003b) and in this study (α = .95).

**Enjoyment in Exercise.** Given that PGB includes “fun” as an element of empowerment, Kendzierski and DeCarlo’s (1991) Physical Activity Enjoyment Scale (PACES) was used to measure participants’ enjoyment during group fitness classes. The PACES consists of several bipolar items asking respondents to rate how they feel about their fitness class in that moment. Ten of the 18 scale items were included (e.g., “I dislike it…I like it”, “I feel bored…I feel
interested”, “I find it energizing…I find it tiring”). The scale was shortened for brevity. Both versions have demonstrated strong internal consistency (α = .85 in this study).

**Victimization.** Koss and colleagues’ (2007) revised Sexual Experiences Survey-Short Form (SES-SFV) was used to measure victimization. The SES-SFV follows the principles outlined by Russell (1982) and Fisher and colleagues (2010), such as avoidance of vague terminology and the use of behaviorally descriptive language. It consists of seven sexual experience items (e.g., “Someone had oral sex with me or made me have oral sex with them without my consent by…” “A man put his penis into my vagina, or someone inserted fingers or objects without my consent by…”). Respondents indicated how many times a sexual act occurred from zero to three or more times since age 14 due to force, coercion, and/or incapacitation from alcohol or drugs (e.g., “Taking advantage of me when I was too drunk or out of it to stop what was happening,” “Threatening to physically harm me or someone else close to me”). Categories were then created for ordinal scoring (i.e., non-victim, sexual contact, sexual coercion, attempted rape, and rape). For this study, non-redundant scores were calculated that prioritized the most severe experience since age 14. Given the nature of the analysis in this study, the categories were recoded as a binary of either some victimization or no victimization. Though the original version of the scale and an additional revision have shown strong reliability (Koss & Gidycz, 1985; Koss, Gidycz, & Wisniewski, 1987), Koss and colleagues (2007) argue that traditional measures of internal consistency (e.g., Cronbach’s alpha) are inappropriate with the current version because the measure is not based on a latent variable model.

**Data Analysis**

Data were first screened to check for normality, outliers, and patterns of missing data. Descriptive statistics were calculated for both time points, including means, standard deviations,
bivariate correlations, and internal consistency reliabilities. Multiple-indicator, multiple cause (MIMIC) modeling (Jöreskog & Goldberger, 1975; Hancock, 2004) was used to test the main study hypothesis. MIMIC modeling is a version of structural equation modeling that assumes a latent variable system and allows for hypothesis testing of group mean differences at the latent construct level (Hancock, 2004). Three dummy variables were constructed to represent four population groups of interest. Women who were in traditional group fitness and had not experienced sexual violence were coded into the first dummy group. The second dummy group consisted of women in traditional group fitness who experienced some level of sexual violence, and the third group was women in PGB who had not been victimized. Victims of sexual violence in PGB were treated as the reference group for the analysis. A total of eight MIMIC models were conducted using the student version of LISREL for Windows for each outcome variable included in the data collection. Model fit was assessed using criteria established by Hu and Bentler (1999) on a variety of indices assessing absolute and relative goodness of fit.

**Results**

Data screening revealed that assumptions of normality were met and no outliers existed. Little’s MCAR test was not significant ($\chi^2 = 3970.66$, DF = 4455, Sig = 1.00), so the 0.32% of values that were missing were imputed using expectation maximization. A total of 149 participants were included, with 60 participating in PGB and 89 participating in the traditional group fitness comparison classes. The levels of experience among PGB members varied. Of the women in PGB, 21 were in their first tier, 9 were in Tier 2, 11 in Tier 3, 6 in Tier 4, 3 in Tier 6, 2 in Tier 6, and 7 in Tier 7. Participants varied in age, with 46 participants between the ages of 18 and 21, 56 between ages 22 and 29, 22 in their 30s, 10 in their 40s, 10 in their 50s, and 5 in their 60s. The majority ($n = 125$) were white and were well educated, with the majority reporting
either some college \( (n = 47) \), completed college \( (n = 31) \), or that they had begun or completed post-graduate work \( (n = 60) \). Sample descriptive statistics \( (N = 149) \) revealed that all respondents scored at least average on all measures and correlations were in anticipated directions. Internal consistency as indicated by Cronbach’s alpha was acceptable for all measures (Table 1).

Table 1

*Descriptive Statistics and Bivariate Correlations for Outcome Variables \( (N = 149) \)*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Empowerment in Exercise</td>
<td></td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Self-Efficacy</td>
<td>.19*</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Enjoyment</td>
<td>.22**</td>
<td>.10</td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Self-Compassion</td>
<td>.20*</td>
<td>.15</td>
<td>.11</td>
<td>.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Fitness Goals</td>
<td>.17*</td>
<td>.43**</td>
<td>.05</td>
<td>.25**</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Personal Goals</td>
<td>.22**</td>
<td>.27**</td>
<td>.08</td>
<td>.29**</td>
<td>.57**</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Professional Goals</td>
<td>.05</td>
<td>.15</td>
<td>.06</td>
<td>.25**</td>
<td>.42**</td>
<td>.70**</td>
<td>.84</td>
<td></td>
</tr>
<tr>
<td>8 Goal Setting</td>
<td>.18*</td>
<td>.35**</td>
<td>.08</td>
<td>.31**</td>
<td>.81**</td>
<td>.90**</td>
<td>.82**</td>
<td>.90</td>
</tr>
</tbody>
</table>

Range       | 1-5    | 1-10   | 1-7    | 1-5    | 1-5    | 1-5    | 1-5    | 1-5    |
M         | 4.39   | 5.87   | 5.63   | 3.20   | 3.94   | 3.98   | 4.18   | 4.03   |
SD        | 0.57   | 1.58   | 1.19   | 0.70   | 0.87   | 0.84   | 0.75   | 0.69   |

Notes. * \( = p < .05 \), ** \( = p < .01 \); Cronbach’s alpha values on diagonal.

Chi-square analyses comparing women in PGB to those in traditional group fitness classes revealed no significant differences in age, race, or education. Table 2 reports the frequency of different forms of sexual violence experienced by the women in this study. About one in four study participants were raped, which is similar to the national statistic of almost 1 in 5 women experiencing rape at some point in their lives (Centers for Disease Control, 2012). Chi-square analyses comparing women in PGB to women in traditional fitness classes indicated no
differences between groups in their victimization experiences. There were also no differences in victimization experience based on age, race, or education.

Table 2

Frequency of Sexual Victimization Experiences by Groups

<table>
<thead>
<tr>
<th>Victimization</th>
<th>PGB</th>
<th>% of Sample</th>
<th>Traditional Fitness</th>
<th>% of Sample</th>
<th>Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-victim</td>
<td>32</td>
<td>53%</td>
<td>53</td>
<td>60%</td>
<td>85</td>
<td>57%</td>
</tr>
<tr>
<td>Some experience, not rape</td>
<td>16</td>
<td>27%</td>
<td>11</td>
<td>12%</td>
<td>29</td>
<td>19%</td>
</tr>
<tr>
<td>Sexual Contact</td>
<td>5</td>
<td>8%(^i)</td>
<td>3</td>
<td>3%</td>
<td>8</td>
<td>5%</td>
</tr>
<tr>
<td>Sexual Coercion</td>
<td>8</td>
<td>13%(^i)</td>
<td>6</td>
<td>7%</td>
<td>16</td>
<td>11%</td>
</tr>
<tr>
<td>Attempted Rape</td>
<td>3</td>
<td>5%</td>
<td>2</td>
<td>2%</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Rape</td>
<td>12</td>
<td>20%</td>
<td>25</td>
<td>28%</td>
<td>37</td>
<td>24%</td>
</tr>
</tbody>
</table>

Notes. \(^i\) Percentages are rounded down.

Covariance matrices for all indicator variables and dummy groups were entered into the student version of LISREL for Windows for MIMIC analyses. Likely due to the relatively small sample size and correspondingly limited power, model fit was unacceptable for all outcome variables with the exception of the Empowerment in Exercise Scale (EES; Moore & Fry, 2014). The model depicted in Figure 2 was fit to the covariance matrix of the total sample and dummy variables on the EES. Model fit examining group differences on the EES was deemed acceptable based on criteria established by Hu and Bentler (1999): \(\chi^2(17) = 38.08\ (p < .01)\), comparative fit index (CFI) = 0.96, standardized root mean square residual (SRMR) = .05, and root mean squared error of approximation (RMSEA) = .09. Though the model chi-square is poor, the statistic is known to be sensitive to sample size and its power is reduced when small samples are used (Hooper, Coughlan, & Mullen, 2008). Thus, alternative measures of fit were included. Though RMSEA fails to meet the recommended cut-off of below .06, the SRMR indicates good absolute fit. Incremental fit was strong, as well (Hu & Bentler, 1999).
Figure 2. MIMIC Model for Group Differences in Empowerment in Exercise Scale. * = $p < .05$, ** = $p < .01$.

Standardized path coefficients from the traditional fitness, non-victim group (-0.24, $p < .05, R^2 = .09$) and the traditional group fitness, victim group (-0.38, $p < .01, R^2 = .09$) were negative and statistically significant. These paths represent the direct effect of group membership (non-victims and victims in traditional group fitness, respectively) on the latent construct of empowerment in exercise. Paths are interpreted in relation to the reference group of victims in PGB (Hancock, 2004). Thus, the negative coefficients indicate that the groups are significantly less empowered than the reference group. In other words, though there are no differences between victims and non-victims within PGB, victims of sexual violence in PGB are more empowered than both non-victims and victims in traditional group fitness. The magnitude of these effects can be calculated by dividing the parameter estimates of each group by the square root of the error variance for the latent construct (Hancock, 2001). The magnitude for the effect
of the first dummy group on the latent construct is 0.52 and 0.82 for the second dummy group on
the latent construct. These results can be interpreted to mean that mean scores on empowerment
for non-victims in traditional group fitness were about half a standard deviation lower than the
PGB victim group and that mean scores for victims in traditional group fitness were just under a
standard deviation lower than the PBG victim group.

**Discussion**

This study examined group differences in empowerment outcomes to determine if
victims of sexual assault who participated in a structured, supportive, community-focused group
exercise class for women were more empowered than women in traditional group fitness classes.
Given the various barriers for victims seeking formal support services, it is argued that
supportive and empathetic informal contexts could be empowering. The sense of self-efficacy
and competence associated with physical achievement in a supportive group exercise
community, combined with the physical and mental health benefits of physical activity, make
this an important context for further investigation. Pink Gloves Boxing is governed by a
curriculum that emphasizes empowerment through the tenets of achievement, fun, and
community, which align well with Cattaneo and colleagues’ (2010; 2015) theoretically grounded
Empowerment Process Model and make the class an excellent setting for this research.

The primary hypothesis of this study was supported by MIMIC modeling that found
significant differences in group mean scores on the Empowerment in Exercise Scale (EES;
Moore & Fry, 2014). Victims who participated in PGB were more empowered than both victims
and non-victims in traditional fitness classes. The EES was designed using Achievement Goal
Perspective Theory (Nicholls, 1989) to assess how a caring and supportive climate can empower
exercisers. It is probable that PGB’s emphasis on community development distinguishes it from
traditional fitness classes, where steps such as getting to know each other, setting and sharing goals, and seeking accountability from both members and instructors may not be as prevalent. No differences were found between victims and non-victims in PGB, suggesting that the impact of this caring and supportive fitness environment does not disproportionately affect women depending on their victimization experience, which bodes well for the empowerment potential of intentionally designed, community-focused group fitness for all participating women.

Significant differences in the EES also suggest that victimized women in PGB felt that the context of the class supported increases in their knowledge, confidence, and ability to exercise on their own (Moore & Fry, 2014). These findings support qualitative research that participation in sport increases women’s bodily competence and perceptions of a competent self, which has been argued to promote empowerment and self-efficacy outside of the physical activity context (Blinde, et al., 1993). Unfortunately, neither the results of this study, nor previous research, clearly distinguishes whether this empowerment is actualized (e.g., women in the class find gains in power), or if women are merely experiencing a “sense” of empowerment and increased power. Follow-up qualitative research that delves into women’s experiences outside of PGB following participation would be beneficial for shedding light on how actual empowerment may occur.

The coping styles of women who have been victimized might also play a contributing role in the study results. The community driven nature of PGB represents an opportunity for positive, healthy coping. The ecological model posits that individual and environmental factors influence victims’ choices of coping strategies (Heise, 1998). One individual characteristic that influences coping is a victim’s perceptions of her control over her life post-assault (Frazier, et al., 2005). Women who perceive some form of control over their own recovery experience less
distress and are less likely to withdraw from others. Withdrawal from others is associated with
more self-blame (Frazier, et al., 2005); thus, women in PGB are likely those who perceive
control over their recovery from assault and their choice to participate in the class reflects their
willingness to engage in a supportive community, as opposed to withdrawing from others. This
could be a selection bias, since women who experience self-blame are more likely to withdraw
and therefore would probably not join a fitness community like PGB, and women who already
feel empowered may be attracted to the program; thus, it is likely that women who are arguably
most in need of empowering opportunities are not reflected in the study sample. However, it is
clear that women in PGB, regardless of victimization history, experience more empowerment
than those in traditional group fitness. Future research examining the effects of PGB based on the
length of participation among participants is needed. Additionally, constructs such as self-
compassion, which was positively related to the EES and goal-setting in this study, are worth
further exploration as potentially important to both coping and empowerment.

The relationship between empowerment within the context of an activity that uses
boxing for victims of violence is complex and controversial. Boxing is often associated with
masculine hegemony due to its violence and what Halbert (1997) refers to as the “myth of men’s
‘natural’ inclination towards violence” (p. 13). While some feminist discussions of female
athletes who participate in traditionally male sport have emphasized the ability of women to
destabilize traditional gender norms (Butler, 1998), a feminist interpretation of how gender roles
are reconstructed in masculine forms, as well as the violence innate to boxing should be
considered when examining the empowerment of female victims of sexual violence. Burstyn
(1999) argues that instrumentality in men’s sport is defined by violence and coercion and that,
though physically strong women have the opportunity to assert their own instrumentality, they
should strive to accomplish this through cooperative and expressive participation. This echoes Riger’s (1993) early critique of empowerment theory as limited for grounding its definition of power as a traditional, instrumental, masculine version of power.

Riger (1993) suggested that empowerment should be conceptualized to include a feminist perspective of power that emphasizes relational and cooperative components. Empowerment in PGB reflects this conceptualization of empowerment; though boxing skills are being taught, PGB fosters cooperative and expressive participation by emphasizing community and fitness in a women’s only format. Many women choose to participate in women’s only classes for a collective and social experience that promotes companionship, support, and a sense of community, as opposed to the masculine, hegemonic alternative (Hargreaves, 1994). Discussions of power in this context have been documented as creative and focused on personal mastery, as opposed to dominance over others (Blinde, et al., 1993). Women in PGB also have the opportunity to gain physical capital by embodying power (Hargreaves, 1997; Whitson, 1994; Gilroy, 1989) and gaining a sense of control (Heywood & Dworkin, 2003). The mental and emotional strength associated with self-possession and controlling one’s body can be a tool for women to overcome the fear of violence and assault (Lawler, 2002). Thus, though the violence typically associated with mainstream perceptions of boxing is problematic, the opportunity to engage in a supportive community while also gaining a sense of self-possession and control is arguably more important for victims of violence, for whom perceptions of control are so vital in healthy recovery (Frazier, et al., 2005).

Limitations

This study is not without limitations. The convenience sample is relatively small and consists of largely well-educated, white women, which does not reflect the empowerment needs
of women who experience more institutional oppression due to barriers associated with race or socioeconomic status. The sample also likely suffers from some selection biases, both among the women in PGB in general and those in PGB who were sexually victimized. The unique nature of PGB may keep some women who prefer to exercise without being social from participating. Also, victimized women who experience self-blame for their assault are more likely to isolate themselves; therefore, it is likely that a subset of victimized women is not captured in this sample. Additionally, though the MIMIC modeling provides an advantage by examining group differences at the latent level, the design is cross-sectional, so no conclusions regarding causation can be made. Future longitudinal research would be beneficial in order to understand how empowerment may change among victims and non-victims in traditional and non-traditional group fitness classes over time. Also, since the EES was the only MIMIC model that fit well, the full scope of empowerment is not captured in these results. Given that the EES was specifically designed to measure empowerment resulting from a caring and compassionate climate, it partially captures elements of competence and knowledge, but does not represent the full construct as theorized in the Empowerment Process Model. As such, this study cannot distinguish between actual empowerment and gaining a “sense” of empowerment. Future research would benefit from the development of a psychometrically sound instrument that provides more comprehensive measurement of empowerment in a physical activity setting. Finally, the likelihood of a selection bias among victims in PGB is a limitation. Future research using a comparison group of victims of sexual violence who seek support via traditional crisis and support services would help shed further light on the potential of informal support settings, such as PGB, to empower victims.

Conclusion
Results of this study provide support for the empowering nature of a women’s only group fitness class that provides a supportive community and the opportunity for physical achievement for victims of sexual violence. Given that various barriers exist for women to seek support from traditional services following victimization, findings that physical activity settings can still be empowering for victims suggests that there is value in physical activity participation for women who have been sexually assaulted or raped. Though formal support services are still important and serve a vital role in local communities, it is important to note that women can seek empowerment in other outlets that may be more personally meaningful. Physical activity is one setting in which women can find support for both their physical and psychological wellbeing.
CONCLUSION

This interdisciplinary project integrated perspectives from multiple disciplines to further the existing research on a) empowerment theory and its application to physical activity contexts, b) the evaluation of intentionally programmed physical activity programs, and c) how such physical activity programs may empower female victims of sexual violence. Pink Gloves Boxing was identified as an empowerment-based, intentionally structured physical activity program that could provide a valuable context for exploring these areas. The findings from this project have important implications for practitioners and researchers in not only physical activity settings, but also for those who advocate for victims of sexual violence.

Recommendations were made for the effective and comprehensive measurement of empowerment in this context, many of which were utilized in an integrated process and impact evaluation of Pink Gloves Boxing. These recommendations are intended to provide a useful reference for both practitioners and researchers, who may use them as a framework for guiding program design and implementation, as well as evaluation. The mixed-methods evaluation of PGB provided insights into the value of integrated evaluation techniques to address program implementation, in addition to potential explanations for how implementation of PGB influences empowerment outcomes. Findings that program fidelity negatively predicts outcomes such as perceptions of autonomy support and fitness goal setting, combined with results that adaptation scores positively predict participants’ enjoyment suggest that evaluating the complementary roles of program fidelity and adaptation can be valuable for understanding the process of how implementation facilitates or thwarts empowerment outcomes. Finally, findings from MIMIC analysis suggested that participation in PGB is more empowering for women in PGB, including those who have been victimized, than for women in traditional group fitness. These results are
important for informing future approaches to advocacy for victims of sexual violence. Physical activity programs that are supportive and community oriented may be a useful addition to services provided by crisis agencies or counselors. Together, findings from these studies provide support for the use of mixed-method evaluation designs for understanding how intentionally designed, community-focused physical activity programs can empower not only women in general, but specifically those who are victims of sexual violence.

Cumulatively, these manuscripts represent an important first attempt at applying a thorough examination of empowerment in physical activity contexts; however, additional work remains. An important next step in this research trajectory is the development of a valid and reliable measure of empowerment as a higher-order construct, specifically for use in physical activity settings. This author recommends grounding instrument development in a model such as Cattaneo and colleagues’ (2010, 2015) Empowerment Process Model, which was designed to promote precision and consistency in the context-specific measurement of empowerment. Additionally, it is challenging to address the distinction between actual acquisition of power and an increase in a “sense” of empowerment. Both PGB and the research design of this project failed to capture this distinction; therefore, it is recommended that additional qualitative research be used as a follow-up to address women’s attitudes and behavior changes both within and outside of the physical activity setting.

These studies were also limited by a convenience sample of limited size. Future work using a larger and purposeful sample of women who are victims of sexual violence would allow for a comparison of women participating in a physical activity program like PGB with those using traditional support services or no services, which would provide deeper insights into the empowerment of victims of sexual violence. Finally, interdisciplinary work and thorough,
expansive program evaluation are both best conducted by a team of researchers (Porter, et al., 2006). Future investigation of this topic would benefit from the work of multiple researchers with a variety of disciplinary perspectives in order to fully capture not only the complex construct of empowerment, but also the important experiences of the women being empowered.

Thus, this interdisciplinary project is a valuable contribution to research on empowerment theory and its application to physical activity settings, evaluation methodology, and the needs of sexual violence victims. Findings indicate that an intentionally designed, community-focused women’s only physical activity class that promotes components of empowerment such as feelings of competence, self-efficacy, and gaining new skills, can empower women and victims of sexual violence. Though future research is needed to develop a more comprehensive measure of empowerment in this setting and to explore the transference of empowerment in this context to others, this project provides important initial evidence to support the potential of physical activity contexts for empowering women who are victims of assault.
BIBLIOGRAPHY


interventions: Resolving tensions between fidelity and fit. *Prevention Science, 5*(1), 41-45.


Jöreskog, K. G., & Goldberger, A. S. (1975). Estimation of a model with multiple indicators and


Lawlor, D.A. & Hopker, S.W. (2001). The effectiveness of exercise as an intervention in the


Peterson, N. A., & Reid, R. J. (2003). Paths to psychological empowerment in an urban


individual empowerment outcomes of socially disadvantaged women: Effects of mode of participation and structural changes in a physical activity promotion program.


Segar, M., Jayaratne, T., Hanlon, J. & Richardson, C.R. (2002). Fitting fitness into women's


Appendix A: Additional Qualitative Results from Focus Groups and Interviews

**Empowerment:**

"Training camp is where we get to understand the manual. We'll lose a day if we have to go through that manual here."

– Jamie, Site B

"I think training camp really helped show me that the manual is helpful because it just works with everything and it really became kind of a mindful experience – Annie, Site B"

"I feel much happier and moreastic because Pink Gloves seems kind funny. Doesn't it? – Pam, Site C"

"When things kind of settle in, I feel like I'm in a happy mood and people are going to welcome you no matter what."

– Annie, Site B

"The place is sacred...It is an active meditation...Meditation through boxing seems kind funny, doesn't it? – Sarah, Site C"

"It's therapy for me. It's therapy for my anxiety – Carly, Site C"

"It's medicine in the ring – Jessica, Site C"

"I feel much happier and moreastic. I think there is a very spiritual aspect here – Jessica, Site C"

**Dislike of other gyms**

"I walked into that gym - I gotta tell you, I was out of there in ten seconds because the people were snotty and nobody talked and nobody cared about each other."

– Jessica, Site C

"You go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Breanna, Site B

"You go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Jamie, Site B

"I heard you're going to be out of shape and working out because I have a lot of fun and feel like I'm not really thinking about what I'm doing and that's just kind of off for me."

– Jamie, Site B

"We go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Jamie, Site B

"I feel much happier and moreastic. I think there is a very spiritual aspect here – Jessica, Site C"

**Empowerment:**

"The Manual

"Training camp is where we get to understand the manual. We'll lose a day if we have to go through that manual here. – Jamie, Site B"

---

**Empowerment:**

"I feel much happier and moreastic. I think there is a very spiritual aspect here – Jessica, Site C"

**Dislike of other gyms**

"I walked into that gym - I gotta tell you, I was out of there in ten seconds because the people were snotty and nobody talked and nobody cared about each other."

– Jessica, Site C

"You go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Jamie, Site B

"You go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Jamie, Site B

"I heard you're going to be out of shape and working out because I have a lot of fun and feel like I'm not really thinking about what I'm doing and that's just kind of off for me."

– Jamie, Site B

"We go to a lot of gyms and you feel like people are judging you and they won't talk to you. I feel like you're judging them and they won't talk to you."

– Jamie, Site B

"I feel much happier and moreastic. I think there is a very spiritual aspect here – Jessica, Site C"

**Empowerment:**

"The Manual

"Training camp is where we get to understand the manual. We'll lose a day if we have to go through that manual here. – Jamie, Site B"
Appendix B. Pre-Survey Items (distributed via Qualtrics).

In order to keep track of your answers, we would like you to create a confidential code. Please write the first three letters of your last name and the first three numbers of your phone number. For example, my name is Amy Cole and my phone number is 476-5555, so my code is COL476.

Please write your code here: ______________________________________________________

We would like to conduct a follow-up evaluation in the future. If you would like to participate in the follow-up, or if you would like to receive a summary of the study results, please give us your email address below.

Email: _____________________________________________________

The following questions ask for information so we can know some basics about you.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your current age?</td>
<td>☐ Some high school ☐ High school graduate ☐ Some college ☐ Trade/technical/vocational training</td>
</tr>
<tr>
<td>What is your current employment status?</td>
<td>☐ Employed for wages ☐ Self-employed ☐ Out of work and looking for work ☐ Out of work but not currently looking for work ☐ A homemaker</td>
</tr>
<tr>
<td>Do you currently or have you recently (i.e., in the last month) participated in an organized group fitness class?</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Was one of the recent group fitness classes Pink Gloves Boxing?</td>
<td>☐ Yes – Continue to question 7 ☐ No – Skip to question 8</td>
</tr>
<tr>
<td>If you regularly (i.e., at least once a week) participate in Pink Gloves Boxing, at what Tier are you currently?</td>
<td>☐ Tier 1 - Boxer ☐ Tier 2 - Pugilist (Pink wraps) ☐ Tier 3 - Journeywoman (Pink gloves) ☐ Tier 4 – Contender (Mitts) ☐ Tier 5 – Prize fighter (Striped wraps) ☐ Tier 6 – Title holder (Heart gloves) ☐ Tier 7 – Champion (Heart mitts)</td>
</tr>
<tr>
<td>We would like to conduct a follow-up evaluation in the future...</td>
<td>We would like to conduct a follow-up evaluation in the future...</td>
</tr>
<tr>
<td>Email: ______________________</td>
<td>Email: ______________________</td>
</tr>
</tbody>
</table>

105
Which of the following group fitness class formats do you participate in regularly (i.e., at least once a week)?

- ☐ Strength training (e.g., strength circuits, boot camp, body sculpt, TRX, kettlebell)
- ☐ High Intensity Interval Training (e.g., Tabata, Crossfit)
- ☐ Mind/Body (e.g., yoga, pilates, Meditation, PiYo, yolates)
- ☐ Aerobic – dance based (e.g., Zumba, Oula, Belly Dancing, Hip-Hop)
- ☐ Aerobic – non-dance based (e.g., Step, water aerobics, cardio kickboxing, cardio circuits, spinning)
- ☐ Other (please list):
  __________________________________________________________
  __________________________________________________________
  __________________________________________________________
  __________________________________________________________

At what location do you take your fitness classes?

_____________________________________________________________________

The following questions are about your certainty or confidence related to physical activity. Regular physical activity refers to three or more times a week for 20 minutes each time.

As of now, how certain or confident are you that you can do regular physical activity...

<table>
<thead>
<tr>
<th>Not Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

If the weather was bothering you

If you were bored by the program or activity

If felt pain when doing the activity

If you had to do the Physical activity alone

If you did not enjoy it

If you were too busy with other activities

If you felt tired

If you felt stressed

If you felt depressed

The following questions refer to the physical activity you experience in group fitness classes. If you regularly take Pink Gloves Boxing, please answer based on that activity. If you do not take Pink Gloves Boxing regularly, please answer based on a group fitness class you do regularly attend. “Instructor” refers to the person or people who lead the fitness class.

Please rate how much you agree with each statement from 1 (strongly disagree) to 5 (strongly agree).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

My confidence to do this activity on my
My knowledge of this activity has increased.

My confidence in my ability to perform the movements/skills has increased.

My instructor’s feedback helped to increase my confidence to perform the movements/skills.

The following questions also refer to the physical activity you experience in *group fitness classes*. If you regularly take Pink Gloves Boxing, please answer based on that activity. If you do not take Pink Gloves Boxing regularly, please answer based on a group fitness class you do regularly attend. “Instructor” refers to the person or people who lead the fitness class.

Please rate how much you agree with each statement from 1 (strongly disagree) to 7 (strongly agree).

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly Agree</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that the instructor provides me with choices, options, and opportunities about whether to do different physical activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I think that the instructor understands why I choose to do physical activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor displays confidence in my ability to do the physical activity exercises in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor encourages me to do the physical activity exercises in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor listens to me about the physical activity exercises we do in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor provides me with positive feedback when I do the physical activity exercises in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I am able to talk to the instructor about the physical activity exercises we do in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor makes sure I understand why I need to do the physical activity exercises in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor answers my questions about doing the physical activity exercises in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>The instructor cares about the physical activity exercises I do in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I feel I am able to share my experiences of the class with the instructor.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I trust the instructor’s advice about the physical activity exercises I do in the class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
Please rate how you feel at the moment about your group fitness class experience.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I enjoy it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I feel bored</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I dislike it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I find it pleasurable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I feel interested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I like it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I find it unpleasurable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I am not at all absorbed in this activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I am very absorbed in this activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It's a lot of fun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It's no fun at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I find it tiring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I find it energizing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It makes me depressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It makes me happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It’s very pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>It’s very unpleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>I feel good physically while doing it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

The following items ask you to reflect on the types of goals you may or may not set for yourself in different parts of your life. Please rate how much you agree with each statement from 1 (strongly disagree) to 5 (strongly agree).

<table>
<thead>
<tr>
<th>Goal Description</th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Not Sure 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I set goals regarding my physical fitness and health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I set goals regarding my personal life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
I set goals regarding my professional life | 1 | 2 | 3 | 4 | 5
---|---|---|---|---|---
I act on the goals I set regarding my physical fitness and health. | 1 | 2 | 3 | 4 | 5
I act on the goals I set regarding my personal life. | 1 | 2 | 3 | 4 | 5
I act on the goals I set regarding my professional life. | 1 | 2 | 3 | 4 | 5
I reflect on the impact of my actions when trying to meet my physical fitness and health goals. | 1 | 2 | 3 | 4 | 5
I reflect on the impact of my actions when trying to meet my personal life. | 1 | 2 | 3 | 4 | 5
I reflect on the impact of my actions when trying to meet my professional life. | 1 | 2 | 3 | 4 | 5
I re-evaluate the physical fitness and health goals I set for myself. | 1 | 2 | 3 | 4 | 5
I re-evaluate the personal goals I set for myself. | 1 | 2 | 3 | 4 | 5
I re-evaluate the professional goals I set for myself. | 1 | 2 | 3 | 4 | 5

The following questions ask you to think about how you feel about yourself.
Please rate how often you do the following from 1 (almost never) to 5 (almost always).

| | Almost Never 1 | 2 | 3 | 4 | Almost Always 5 |
---|---|---|---|---|---|---|
I try to be understanding and patient towards those aspects of my personality I don’t like. | 1 | 2 | 3 | 4 | 5 |
I’m kind to myself when I’m experiencing suffering. | 1 | 2 | 3 | 4 | 5 |
When I’m going through a very hard time, I give myself the caring and tenderness I need. | 1 | 2 | 3 | 4 | 5 |
I’m tolerant of my own flaws and inadequacies. | 1 | 2 | 3 | 4 | 5 |
I try to be loving towards myself when I’m feeling emotional pain. | 1 | 2 | 3 | 4 | 5 |
When I see aspects of myself that I don’t like, I get down on myself. | 1 | 2 | 3 | 4 | 5 |
When times are really difficult, I tend to be tough on myself. | 1 | 2 | 3 | 4 | 5 |
I can be a bit cold-hearted towards myself when I’m experiencing suffering. | 1 | 2 | 3 | 4 | 5 |
I’m disapproving and judgmental about my own flaws and inadequacies. | 1 | 2 | 3 | 4 | 5 |
I’m intolerant and impatient towards those aspects of my personality I don’t like. | 1 | 2 | 3 | 4 | 5 |
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

I try to see my failings as part of the human condition.

When I’m down and out, I remind myself that there are lots of other people in the world feeling like I am.

When things are going badly for me, I see the difficulties as part of life that everyone goes through.

When I fail at something that's important to me I tend to feel alone in my failure.

When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world.

When I’m really struggling I tend to feel like most other people are probably happier than I am.

When something upsets me I try to keep my emotions in balance.

When I’m feeling down I try to approach my feelings with curiosity and openness.

When something painful happens I try to take a balanced view of the situation.

When I fail at something important to me I try to keep things in perspective.

When something upsets me I get carried away with my feelings.

When I’m feeling down I tend to obsess and fixate on everything that’s wrong.

When something painful happens I tend to blow the incident out of proportion.

When I fail at something important to me I become consumed by feelings of inadequacy.

The following questions concern sexual experiences that you have had that were unwanted. We know that these are personal questions, so assure you that your information is completely confidential. We hope this helps you to feel comfortable answering each question honestly. Place a check mark in the box (☐) showing the number of times each experience has happened to you (0 to 3+). If several experiences occurred on the same occasion – for example, if one night someone told you lies and had sex with you when you were drunk, you would check both boxes a and c. "The past 12 months" refers to the past year going back from today. "Since you were 14" refers to your life starting on your 14th birthday and stopping one year ago from today.

<table>
<thead>
<tr>
<th>Sexual Experiences</th>
<th>How many times in the past 12 months?</th>
<th>How many times since age 14?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Someone fondled, kissed, or rubbed up against the private areas of my body (lips, breast/chest, crotch or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by:</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>a. Telling lies, threatening to end the</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

110
### 1. Relationship, physical contact, and coercion

<table>
<thead>
<tr>
<th>Relationship/Contact</th>
<th>How many times in the past 12 months?</th>
<th>How many times since age 14?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>d. Threatening to physically harm me or someone close to me.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

### 2. Someone had oral sex with me or made me have oral sex with them without my consent

<table>
<thead>
<tr>
<th>How many times in the past 12 months?</th>
<th>How many times since age 14?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

| a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| c. Taking advantage of me when I was too drunk or out of it to stop what was happening. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| d. Threatening to physically harm me or someone close to me. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |

### 3. A man put his penis into my vagina or someone inserted fingers or objects without my consent

<table>
<thead>
<tr>
<th>How many times in the past 12 months?</th>
<th>How many times since age 14?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

| a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| c. Taking advantage of me when I was too drunk or out of it to stop what was happening. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
| d. Threatening to physically harm me or someone close to me. | ☐ ☐ ☐ ☐ ☐ | ☐ ☐ ☐ ☐ ☐ |
someone close to me.  

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. A man put his penis into my butt, or someone inserted fingers or objects without my consent by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d. Threatening to physically harm me or someone close to me.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How many times in the past 12 months?</td>
<td>How many times since age 14?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Even though it did not happen, someone TRIED to have oral sex with me or make me have oral sex with them without my consent by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d. Threatening to physically harm me or someone close to me.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<p>|   | How many times in the past 12 months? | How many times since age 14? |
| 6. Even though it did not happen, a man TRIED to put his penis into my vagina, |   |   |   |   |   |   |   |</p>
<table>
<thead>
<tr>
<th>or someone tried to stick in fingers or objects without my consent by:</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d. Threatening to physically harm me or someone close to me.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>How many times in the past 12 months?</th>
<th></th>
<th></th>
<th></th>
<th>How many times since age 14?</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Even though it did not happen, a man tried to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force after I said I didn't want to.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d. Threatening to physically harm me or someone close to me.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Did any of the experiences in the previous questions happen to you one or more times?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

What was the sex of the person or persons who did them to you?

<table>
<thead>
<tr>
<th>I reported no experience</th>
<th>Female only</th>
<th>Male only</th>
<th>Both females and males</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Have you ever been raped?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Thank you very much for taking the time to complete this survey. Please use this space to let us know if you have any questions or comments regarding the survey you just completed.
Appendix C. Formatted Post-Survey (Distributed via Qualtrics).

In order to keep track of your answers, we would like you to create a confidential code. Please write the first three letters of your last name and the first three numbers of your phone number. For example, my name is Amy Cole and my phone number is 476-5555, so my code is COL476.

Please write your code here: ______________________________________________________

We would like to conduct a follow-up evaluation in the future. If you would like to participate in the follow-up, or if you would like to receive a summary of the study results, please give us your email address below.

Email: _____________________________________________________

The following questions ask for information so we can know some basics about you.

<table>
<thead>
<tr>
<th>What is your current age?</th>
<th>__________________________</th>
</tr>
</thead>
</table>
| Do you currently or have you recently (i.e., in the last month) participated in an organized group fitness class? | □ Yes  
□ No |
| Was one of the recent group fitness classes Pink Gloves Boxing? | □ Yes – Continue to question 7  
□ No – Skip to question 8 |
| If you regularly (i.e., at least once a week) participate in Pink Gloves Boxing, at what Tier are you currently? | □ Tier 1 - Boxer  
□ Tier 2 – Pugilist (Pink wraps)  
□ Tier 3 – Journeywoman (Pink gloves)  
□ Tier 4 – Contender (Mitts)  
□ Tier 5 – Prize fighter (Striped wraps)  
□ Tier 6 – Title holder (Heart gloves)  
□ Tier 7 – Champion (Heart mitts) |
| Which of the following group fitness class formats do you participate in regularly (i.e., at least once a week)? | □ Strength training – with equipment (e.g. TRX, Gravity/Total Gym GTS)  
□ Strength training – body weight (e.g. strength circuits, bootcamp, body sculpt, Barre)  
□ High Intensity Interval Training (e.g. Tabata, Crossfit)  
□ Mind/Body (e.g. yoga, pilates, Meditation, PiYo, yolates)  
□ Aerobic – dance based (e.g., Zumba, Oula, Belly Dancing, Hip-Hop)  
□ Aerobic – non-dance based (e.g., Step, water aerobics, cardio kickboxing, cardio circuits, spinning)  
□ Other (please list): __________________________ |
| At what location do you take your fitness classes? | ___________________________________ |
As of now, how certain or confident are you that you can do regular physical activity...  

<table>
<thead>
<tr>
<th>Not Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>If the weather was bothering you</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you were bored by the program or activity</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If felt pain when doing the activity</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you had to do the physical activity alone</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you did not enjoy it</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you were too busy with other activities</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you felt tired</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you felt stressed</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>If you felt depressed</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

The following questions refer to the physical activity you experience in *group fitness classes*. If you regularly take Pink Gloves Boxing, please answer based on that activity. If you do not take Pink Gloves Boxing regularly, please answer based on a group fitness class you do regularly attend. "Instructor" refers to the person or people who lead the fitness class.

Please rate how much you agree with each statement from 1 (strongly disagree) to 5 (strongly agree).

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Not Sure 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>My confidence to do this activity on my own has increased.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My knowledge of this activity has increased.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I now have a better understanding of the activity’s basic concepts and principles.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My confidence in my ability to perform the movements/skills has increased.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My instructor's feedback helped to increase my confidence to perform the movements/skills.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please answer based on a group fitness class you do regularly attend. "Instructor" refers to the person or people who lead the fitness class.

Please rate how much you agree with each statement from 1 (strongly disagree) to 7 (strongly agree).

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that the instructor provides me with choices, options, and</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>opportunities about whether to do different physical activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that the instructor understands why I choose to do physical</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>activity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor displays confidence in my ability to do the physical</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>activity exercises in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor encourages me to do the physical activity exercises in</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor listens to me about the physical activity exercises we do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor provides me with positive feedback when I do the physical</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>activity exercises in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to talk to the instructor about the physical activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>exercises we do in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor makes sure I understand why I need to do the physical</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>activity exercises in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor answers my questions about doing the physical activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>exercises in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructor cares about the physical activity exercises I do in</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel I am able to share my experiences of the class with the</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>instructor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I trust the instructor's advice about the physical activity exercises</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I do in the class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please rate how you feel at the moment about your group fitness class experience.

<table>
<thead>
<tr>
<th>Feeling</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>I hate it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>I feel bored</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>I feel interested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>
I dislike it | I like it

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I find it unpleasurable</td>
</tr>
<tr>
<td>I find it pleasurable</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am not at all absorbed in this activity</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I am very absorbed in this activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I find it unpleasurable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find it energizing</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>I find it tiring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I am not at all absorbed in this activity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>It's a lot of fun</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>It's no fun at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I find it unpleasurable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find it pleasant</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>It's very unpleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I find it unpleasurable</td>
</tr>
</tbody>
</table>

The following items ask you to reflect on the types of goals you may or may not set for yourself in different parts of your life *IN THE LAST TWO MONTHS*. Please rate how much you agree with each statement from 1 (strongly disagree) to 5 (strongly agree).

<table>
<thead>
<tr>
<th>In the last two months...</th>
<th>Strongly Disagree 1</th>
<th>Disagree 2</th>
<th>Not Sure 3</th>
<th>Agree 4</th>
<th>Strongly Agree 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I set goals regarding my physical fitness and health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I set goals regarding my personal life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I set goals regarding my professional life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I act on the goals I set regarding my physical fitness and health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I act on the goals I set regarding my personal life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I act on the goals I set regarding my professional life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I reflect on the impact of my actions when trying to meet my physical fitness and health goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I reflect on the impact of my actions when trying to meet my personal life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
I reflect on the impact of my actions when trying to meet my professional life.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I re-evaluate the physical fitness and health goals I set for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I re-evaluate the personal goals I set for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I re-evaluate the professional goals I set for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

I have achieved one or more of my physical fitness and health goals.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have achieved one or more of my personal goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have achieved one or more of my professional goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The following questions ask you to think about how you feel about yourself.

Please rate how often you do the following from 1 (almost never) to 5 (almost always).

<table>
<thead>
<tr>
<th></th>
<th>Almost Never 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Almost Always 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I try to be understanding and patient towards those aspects of my personality I don't like.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I'm kind to myself when I'm experiencing suffering.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When I'm going through a very hard time, I give myself the caring and tenderness I need.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I'm tolerant of my own flaws and inadequacies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I try to be loving towards myself when I'm feeling emotional pain.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When I see aspects of myself that I don't like, I get down on myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When times are really difficult, I tend to be tough on myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I can be a bit cold-hearted towards myself when I'm experiencing suffering.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I'm disapproving and judgmental about my own flaws and inadequacies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I'm intolerant and impatient towards those aspects of my personality I don't like.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I try to see my failings as part of the human condition.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.  

When things are going badly for me, I see the difficulties as part of life that everyone goes through.  

When I fail at something that is important to me I tend to feel alone in my failure.  

When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world.  

When I'm feeling down I tend to feel like most other people are probably happier than I am.  

When I'm really struggling I tend to feel like other people must be having an easier time of it.  

When something upsets me I try to keep my emotions in balance.  

When I'm feeling down I try to approach my feelings with curiosity and openness.  

When something painful happens I try to take a balanced view of the situation.  

When I fail at something important to me I try to keep things in perspective.  

When something upsets me I get carried away with my feelings.  

When I'm feeling down I tend to obsess and fixate on everything that's wrong.  

When something painful happens I tend to blow the incident out of proportion.  

When I fail at something important to me I become consumed by feelings of inadequacy.  

---

The following questions ask you to think about how you feel about your body. Please rate how often you do the following from 1 (Never) to 5 (Always).  

<table>
<thead>
<tr>
<th></th>
<th>Never 1</th>
<th>Seldom 2</th>
<th>Sometimes 3</th>
<th>Often 4</th>
<th>Always 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I respect my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel good about my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>On the whole, I am satisfied with my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Despite flaws, I accept my body for what it is.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel that my body has at least</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I take positive attitude towards my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am attentive to my body’s needs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>My self-worth is independent of my body shape or weight.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I do not focus a lot of energy being concerned with my body shape or weight.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>My feelings toward my body are positive, for the most part.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I engage in healthy behaviors to take care of my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I do not allow unrealistically thin images of women in the media to affect my attitudes toward my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Despite its imperfections, I still like my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Thank you very much for taking the time to complete this survey. Please use this space to let us know if you have any questions or comments regarding the survey you just completed.

_____________________________________________________________________________________________________________________________
_____________________________________________________________________________________________________________________________
_____________________________________________________________________________________________________________________________
Appendix D. Site A Implementation Checklist.

Implementation Checklist for Washington State University

<table>
<thead>
<tr>
<th>Component of Implementation</th>
<th>Present?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of or reference to the PGB Manual</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Uses Tier System</td>
<td>Y</td>
<td>Classes are mixed but all tier workouts are posted and skills progressed accordingly</td>
</tr>
<tr>
<td>Workout: General warm-up</td>
<td>Y</td>
<td>Some members lead</td>
</tr>
<tr>
<td>Workout: Specific warm-up</td>
<td>Y</td>
<td>Example of when tiers are separated for specific skills</td>
</tr>
<tr>
<td>Workout: Circuit</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Workout: Abs &amp; cool-down</td>
<td>SW</td>
<td></td>
</tr>
<tr>
<td>Asks PGB question of the day</td>
<td>SW</td>
<td>Sometimes not the PGB question</td>
</tr>
<tr>
<td>Tracks attendance</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

Adaptation

✓ Abs are a station in the circuit to allow for more conversation opportunity during cool down

IMPLEMENTATION SCORE: 11/16
Adaptation +1
Appendix E. *Site B Implementation Checklist.*

**Implementation checklist for Montana State University**

<table>
<thead>
<tr>
<th>Component of Implementation</th>
<th>Present?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of or reference to the PGB Manual</td>
<td>Y</td>
<td>- Some manuals present, beginning classes used them</td>
</tr>
<tr>
<td>Uses Tier System</td>
<td>Y</td>
<td>- Classes separate until upper tiers, though they are likely to merge lower tiers soon</td>
</tr>
<tr>
<td>Workout: General warm-up</td>
<td>Y</td>
<td>- Some are member-led</td>
</tr>
<tr>
<td>Workout: Specific warm-up</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Workout: Circuit</td>
<td>Y</td>
<td>- Tier 5+ class was all the instructor's choosing because there are no pre-designated workouts available for those tiers - One instructor made up total body bout</td>
</tr>
<tr>
<td>Workout: Abs &amp; cool-down</td>
<td>Y</td>
<td>- Members select exercise - Shortened due to focus group context</td>
</tr>
<tr>
<td>Asks PGB question of the day</td>
<td>SW</td>
<td>- Not the PGB question</td>
</tr>
<tr>
<td>Tracks attendance</td>
<td>Y</td>
<td>- Members sign in each class and have the option to make up absences at open gym</td>
</tr>
</tbody>
</table>

**Adaptation**

- Trainers pick more challenging workouts if they think members are ready for it

**IMPLEMENTATION SCORE: 15/16**

Adaptation: +1
Appendix F. *Site C Implementation Checklist.*

**Implementation checklist – Butte**

<table>
<thead>
<tr>
<th>Component of Implementation</th>
<th>Present?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of or reference to the PGB Manual</td>
<td>N</td>
<td>-No manuals present</td>
</tr>
<tr>
<td>Uses Tier System</td>
<td>SW</td>
<td>-All classes mixed except tier I</td>
</tr>
<tr>
<td>Workout: General warm-up</td>
<td>Y</td>
<td>-Members led</td>
</tr>
<tr>
<td>Workout: Specific warm-up</td>
<td>Y</td>
<td>-Very skill-specific instruction during specific warm-up</td>
</tr>
<tr>
<td>Workout: Circuit</td>
<td>Y</td>
<td>-Modified by adding a station due to extra member (the researcher) -Also added more individual hitting combined with member choice of group exercise while one person hit</td>
</tr>
<tr>
<td>Workout: Abs &amp; cool-down</td>
<td>Y</td>
<td>-Each member picked a core exercise, but this stopped due to the focus group context</td>
</tr>
<tr>
<td>Asks PGB question of the day</td>
<td>SW</td>
<td>-Not always the question provided by PGB</td>
</tr>
<tr>
<td>Tracks attendance</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

**Adaptation**

- ✓ Inclusion of mindfulness cueing and outside mindfulness training
- ✓ Extra bout in the circuit due to more people
- ✓ Extra individual hitting at the end of the circuit while the rest of the group did a body-weight exercise together (each member got to pick an exercise after hitting)
- ✓ Non-traditional classes with professional boxers or days that emphasize form

**IMPLEMENTATION SCORE: 10/16**
**ADAPTATION: +4**
Appendix G. Site A Summary Report.

The following report is a summary of the observations and interviews conducted at Washington State University from October 14th to October 16th, 2014. The main purpose of this summary report is to confirm the accuracy of the researcher’s interpretation with those who participated in the focus groups and interviews during this time. Please feel free to contact Amy Cole (408-476-8064; ancole@wsu.edu) with any comments or questions regarding the summary or the research project in general. Thank you for your participation in this project.

The Pink Gloves Boxing (PGB) program at Washington State University (WSU) was one of the first large university PGB programs in the country and has a small but strong following of upper-tier members, as well as many new and enthusiastic members. The trainers are passionate and invested in the program’s growth and continued success. This summary represents the researcher’s interpretation of the conversations had among members, trainers, and professional staff involved in the Pink Gloves Boxing program at Washington State University.

Implementation of the Program

The programmers at WSU have made some changes to the PGB model to enhance its delivery for UREC patrons. These changes include how membership is purchased (e.g., members can elect to purchase a kit separately), as well as how the workout is structured (e.g., the addition of an abs bout). Members enjoy the structure and diversity of the workouts and appreciate the ability to go at their own pace, but still have the company of another member to go through the workout with:

“I like the bouts and the two minutes, the idea that I can do anything for two minutes if I just work through it and being able to be at my own pace and be in a class that’s bigger so you almost always have a partner, someone you’re working with and encouraging each other.”

“The way I see it structured is you guys give us the tools and it’s what you make of it because you could get a really hard work out and then also you can like skip around if you’re feeling lazy. I think that empowers you because it gives you the choice. It motivates you and makes you self-motivated.”

WSU mixes tiers in all their classes, so all members can workout together, regardless of tier. Members have mixed feelings about this choice, though instructors and professional staff understand its value:

“There were three tier two girls and they all knew each other and had their own kind of thing so they were kind of separate. I didn’t feel as connected to them.”

“I kind of liked [the mixed tiers] because you can see the next step and what you’re going for.”

“We’ve had it where the tier II people are with the tier I and they’re all doing like the 1-8 in the beginning and they get bored because they’re just standing there. So that’s why we separate them when we do the specific warm-up so that they can focus on doing other things, but then they join [in] for the workouts.”

Trainers express two main challenges in implementing the program at WSU. First, they have struggled in the past with all of the “moving parts” of PGB and programming in multiple facilities. They express concern over “communication glitches” getting all of the PGB gear and equipment to members in a timely way, but are eager to work for improvement in this area.
The second, and more widely expressed, challenge is the use of the PGB Manual. Trainers who have gone through training camp recognize the importance of the manual for promoting PGB culture, but struggle with the logistics of using them in class:

“It’s hit or miss in each semester whether we do everything that’s in there or not. By and large we’re good at getting through the who, what, why, how, but not always the other interesting stuff that’s in there.”

“I think when they work and when the patrons use them, they’re fantastic. It’s when we sort of, when we forget or they forget or they don’t have them, when that stuff starts happening that they stop being as useful.”

“I didn’t really use it. And there could be a couple reasons why, depending on where we were in the semester, if we hadn’t gotten a shipment in and our patrons didn’t have a manual that’s a large reason why we didn’t use it. Depending on how the class went, you know circling up, talking about community sometimes the conversation would go in a different direction.”

“Sometimes it’s like pulling teeth. People don’t bring them, don’t answer them, so it’s like you said we’re going to do this but then only two people have it. There’s ten people, are you going to do it with those two people then be like, okay we’re going to do it next time? But when they do answer the questions they seem enthusiastic about it.”

The trainers suggested encouraging members to fill their manuals out in class, which might be an effective solution to part of this challenge.

**Empowerment**

Despite challenges using the PGB Manual in class, members expressed elements of empowerment as outlined in the manual, particularly the achievement component. Members and trainers appreciate the sense of accountability they get in PGB:

“And I like how we got to share, too, because most of us are strangers and stuff it’s kind of cool to see that other people have goals.”

“I think that saying it out loud to a group of people makes you hold yourself more accountable, regardless of if they hold you accountable. I think [for] some of us who have been together for multiple sessions, hey how’s this going or checking in on things, just saying it out loud to a group of people makes you have to hold it to yourself and own that you want to do this.”

They value the goal-setting processes in the PGB Manual:

“You have a goal, you can say you have a goal, but if you don’t break it down into why you want to do it or how you’re going to do it or why it’s important, then you kinda lose sight of why, you know, the goal itself. So breaking it down is why it’s good.”

For members (or trainers who began as members) who have participated in the program for multiple sessions, there is a clear sense of community.

“I mean, there’s the few who really get into PGB and you make a lot of friends and it’s, it grows outside of PGB too.”
Some members expressed a strong bond with their trainers, who support them and make the experience fun.

“You definitely become, I think I became friends with my instructors and other people in the group, so it wasn’t just like a ‘I’m your teacher, you’re my student’ or ‘I’m your student, you’re my teacher.’ It was definitely a friendship.”

“I’m pretty goofy and stuff and they’re really good at keeping it professional even though I’m trying to distract them and stuff. We can goof around but it doesn’t make everything fall apart...There’s a really good chance to have fun.”

In summary, though there are some challenges with communication and implementing the PGB Manual, the members and trainers at Washington State University still experience the elements of empowerment outlined in the Manual. Trainers are passionate and dedicated to the mission and core habits of Pink Gloves Boxing, and are working to overcome these challenges in order to best support and train continuing and new members.
Appendix H. Site B Summary Report.

The following report is a summary of the observations and interviews conducted at
[redacted] from October 1st to October 3rd, 2014. The main purpose of this summary report is to confirm the accuracy of the researcher’s interpretation with those who participated in the focus groups and interviews during this time. Please feel free to contact Amy Cole (408-476-8064; ancole@wsu.edu) with any comments or questions regarding the summary or the research project in general. Thank you for your participation in this project.

The Pink Gloves Boxing (PGB) program at Montana State University (MSU) was the first large university PGB program. The trainers and members take pride in this and work hard to maintain a strong program grounded in community and fun. This summary represents the researcher’s interpretation of the conversations had among members, trainers, and professional staff involved in the Pink Gloves Boxing program at Montana State University.

Implementation of the Program

MSU offers several classes currently separated by tier, though they are likely to merge classes to provide more time and day options for members. Trainers appreciate and follow the PGB Manual for how classes are delivered, while also feeling comfortable exercising autonomy in how use the manual to work with members in each class.

“It’s probably the easiest class to teach in the world, ’cause I just open the book and boom.”

“It’s great because 1-4 tiers, we have the books and if we feel they’re past that point in something we’re doing that day we can jump ahead. You can do that as an instructor, you can make that judgment call.”

Trainers’ sense of autonomy extends to how they use the PGB Manual. Members expressed a wide variety of opinions regarding the Manual and their preferences for using it, which trainers are able to respond and adapt to.

“Some instructors are really into it, they love the manual, they love having it, they love the structure, they love referencing it and...other instructors are much more free spirits about it...They base stuff off the manual but they might not follow it to a tee.”

“I pull combos out of it a couple times but we pretty much just go towards it when we look at what are the core habits, what are your mental challenges. We really don’t pull it out every week and be like, "let’s read this!" or all the sections like Define your Name and all that, we really don’t do much of that in here. It’s real just quick questions because we want to still do abs and still stretch and not worry about writing stuff down.”

“We used it more at a training camp. In the class, in this setting in class we don’t have the time. If I take a half a class to go over that manual, you’re losing that time. I want you to workout.”

Members who have been in PGB for multiple semesters express the value of the Manual, while newer members are slightly more skeptical.

“I think some of the things in there, the core habits and stuff, I think those are a good thing to go over each tier because for me, Pink Gloves is not just boxing, it’s you know, getting those
core habits, making them part of my life, meeting new people, incorporating those people into my community and building a group.”

“I didn’t pay attention to it until we wrote [the Reflective Test] and writing that and reading that I was like, oh, this is meaningful. It kind of clicked which I thought was really nice and I liked, you know, before I was like, ‘manual, pfh, I don’t read manuals’. Then I was like oh, it’s helpful! I get it.”

“It made me mad when I was told to look at it. I don’t want to research stuff in my spare time…And it like actually frustrated me… Then one day I was like, what’s actually in here, because I didn’t actually know. So now I can see that it’s helpful, like I know the combos and things are in there…So now I think it’s a very helpful tool and I think training camp helped show me that the manual is helpful there, but it took me a while to get over the textbook [feeling].”

**Empowerment**

Despite variability in the use of the PGB Manual in class, members still experience the elements of empowerment as outlined in the manual and cite training camp as an important part of that process. This is most apparent in the strong sense of community apparent among members and trainers.

“The members, they’re not just participants, they’ve actually become friends. They’re a family. We’re a family, maybe dysfunctional sometimes, but we’re a family.”

“I wanted more of the workout. But then the more I was in and actually talked to people and I’d see them outside and we started talking outside, then the relationships started coming where I really come to enjoy it.”

“I was like really quiet and, like I could see people trying so I was like okay, if they’re going to try then I’ll try it. And it was towards the end that’s when I started coming out more and now I can just joke around.”

“You can be who you are and it doesn’t matter…people are going to welcome you no matter what.”

Beyond the sense of community, some members find their experience extends to a sense of self-care and personal change.

“I started because I wanted to do something I didn’t know I’d be good at and not let being scared of that stop me…I’m not going to let fear dictate what I do. What I really liked is once you got here, wherever you were, that’s where you started. I think that revealing the champion instead of making yourself a champion means that you already had the skills to do what you need to do.”

“It’s been quite a life-changer for me. It’s completely changed me…I was quiet, couldn’t do anything. I was overweight, hated life, and now I have just a total complete change of attitude.”

“I’ve lost my sense of self-care and Pink Gloves had made me very much aware of like presence of person and body and health and it’s really been uh, kind of a humbling experience.”
“I have to say coming here every day has actually been really helpful. It just works with everything and it makes me, like, get everything out so it doesn't ball up and I end up breaking down.”

“It’s very therapeutic.”

In summary, trainers rely on flexibility and responsiveness to members regarding how they use the PGB Manual in a way that still allows members to experience the tools of empowerment outlined in the PGB Manual. They form a strong community both inside and outside of the studio. Finally, members and trainers demonstrate passion and dedication to the PGB program, as well as a clear understanding of the PGB mission of revealing the champion.
Appendix I. Site C Summary Report.

The following report is a summary of the observations and interviews conducted at the Pink Gloves Boxing gym in [location] on September 29 and 30, 2014. The main purpose of this summary report is to confirm the accuracy of the researcher’s interpretation with those who participated in the focus groups and interviews during this time. Please feel free to contact Amy Cole (408-476-8064; ancole@wsu.edu) with any comments or questions regarding the summary or the research project in general. Thank you for your participation in this project.

The Pink Gloves Boxing club in Butte, Montana, has a widely recognized reputation as being the “heart” of PGB, and rightfully so. The atmosphere of the gym and the level of connection expressed by members and trainers is unique among PGB gyms. This summary represents the researcher’s interpretation of the conversations had among members, trainers, and the coordinator of the gym in Butte.

Implementing the Workout
The Butte gym exercises a good deal of autonomy in how the workout is implemented, with classes ranging in format from standard PGB workouts to non-traditional, skill-focused classes with professional boxers as guest trainers. Members feel a sense of open communication with each other and with the trainers, so they’re comfortable asking to work on a specific muscle group or skill (or asking to skip a particular muscle group for the day). With the exception of a beginners’ session, all tiers are mixed and emphasis is placed on equality in effort and challenging yourself, regardless of tier:

“We talk a lot in here about how Tier 7 is no different than Tier 1 and your class that you’re at today is no different than your first class. It’s no different.”

Members feel comfortable going at their own pace during the workouts, but appreciate the physical challenge and sense of accomplishment after completing them:

“You can go at your own pace, too. So if you have a day when you’re feeling kick-ass then you can go as hard, as strong, as fast as you want to, and when there’s days when you have a head cold and you don’t feel like it you can slow down.”

“There’s a real physically demanding part of this, but it’s done in such a way that you can make it.”

Overall, though there are challenges associated with being a traditional gym and not a university, the Butte PGB gym succeeds at adapting the workouts and structure to suit their dynamic.

Empowerment
Though the PGB Manual is very rarely used outside of PGB training camps, members still experience the three tools of empowerment outlined by PGB (i.e., community, achievement, and fun). There is a tangible sense of community and support among members of PGB in Butte:

“I feel like I just deeply have community here.”

“It is a family for me.”
“It’s crazy, these are the people I’ve known the least in my life but I feel like I know them more than anybody. You know like they’re good true friends. And I feel a bond with everyone here.”

The women in this gym feel supported by each other and accepted as they are:

“We’re all fine here. However you are you’re perfect and you don’t have to keep up with anybody else, you don’t have to impress anybody else and I like doing that.”

Their sense of community helps them be accountable, so members feel supported in accomplishing their goals. They support each other as they set and achieve goals:

“I felt so good coming here that you do, you just want to come more and come more. And now it’s gotten to where I feel good, I feel athletic here. I feel like I’ve accomplished something and then it’s made me branch out.”

“It’s the accomplishment and the friendships.”

And, importantly, they do all this while having fun:

“That’s been the biggest thing is it’s fun. That’s what’s kept me going.”

“You can laugh. Like we were laughing tonight.”

Additionally, members and trainers at Butte experience a very deep and personal connection with the class that can be described as almost spiritual. The gym is a place where they can practice mindfulness, healing, and self-care:

“It’s sacred. That it is an active meditation.”

“It is actually medicine for me, it’s therapy for me, for my anxiety.”

“I think there’s a very spiritual aspect here… I feel much happiness and settled and peaceful.”

Members’ experience in Butte is distinctly different from experiences members have had in other gyms, where they felt intimidated, disconnected, and self-conscious. Instead, being a member of PGB in Butte has been transformational for some. Not only has their physical strength increased, but so has their emotional strength:

“I’m not uncoordinated in here… People just kind of tell you how you are and you believe that’s how you are and something inside me just snapped and it’s like I’m, I’m where I want to be, you know.”

“I think being in here has also inspired me to do things that I wouldn’t have done… You find yourself.”

“I feel stronger than I have ever felt. I have more strength physically and emotionally.”

In summary, though the implementation of the PGB program isn’t reliant on the PGB Manual, the members and trainers at the PGB gym in Butte still experience empowerment as defined by PGB. Their experiences go beyond this, though, as they consistently express a strong connection to not
only the program but to each other. Though each woman has a different story, their sense of community runs deep and each expressed gratitude to PGB for improving both their physical and emotional strength.
Appendix J. LISREL MIMIC Model Syntax for Empowerment in Exercise Scale

EMPOWERMENT MODEL
OBSERVED VARIABLES
EES1 EES2 EES3 EES4 EES5 D1 D2 D3
COVARIANCE MATRIX
.694
.329 .469
.233 .349 .438
.262 .317 .275 .436
.151 .273 .294 .261 .675
-.067 -.003 -.035 -.031 -.034 .231
-.016 -.065 -.059 -.041 -.043 -.087 .184
.062 .029 .034 .034 .076 -.077 -.052 .170
SAMPLE SIZE IS 149
LATENT VARIABLES
EMP
RELATIONSHIPS
EES1 = 1*EMP
EES2 = EMP
EES3 = EMP
EES4 = EMP
EES5 = EMP
EMP = D1 D2 D3
PATH DIAGRAM
END OF PROBLEM
Appendix K. LISREL MIMIC Output for Empowerment in Exercise Scale Model

DATE: 10/13/2015
TIME: 15:25

L I S R E L 9.20 (STUDENT)

BY

Karl G. Jöreskog & Dag Sörbom

This program is published exclusively by
Scientific Software International, Inc.
http://www.ssicentral.com

Use of this program is subject to the terms specified in the
Universal Copyright Convention.

The following lines were read from file C:\Users\ancole\Desktop\LISREL Dis Files\EMP 10_13.spj:

EMPOWERMENT MODEL
OBSERVED VARIABLES
EES1 EES2 EES3 EES4 EES5 D1 D2 D3

COVARIANCE MATRIX
.694
.329 .469
.233 .349 .438
.262 .317 .275 .436
.151 .273 .294 .261 .675
-.067 -.003 -.035 -.031 -.034 .231
-.016 -.065 -.059 -.041 -.043 -.087 .184
.062 .029 .034 .034 .076 -.077 -.052 .170

SAMPLE SIZE IS 149

LATENT VARIABLES
EMP

RELATIONSHIPS
EES1 = 1*EMP
EES2 = EMP
EES3 = EMP
EES4 = EMP
EES5 = EMP
EMP = D1 D2 D3

PATH DIAGRAM

END OF PROBLEM

Sample Size = 149

EMPOWERMENT MODEL

Covariance Matrix
<table>
<thead>
<tr>
<th></th>
<th>EES1</th>
<th>EES2</th>
<th>EES3</th>
<th>EES4</th>
<th>EES5</th>
<th>D1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES1</td>
<td>0.694</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES2</td>
<td>0.329</td>
<td>0.469</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES3</td>
<td>0.233</td>
<td>0.349</td>
<td>0.438</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES4</td>
<td>0.262</td>
<td>0.317</td>
<td>0.275</td>
<td>0.436</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES5</td>
<td>0.151</td>
<td>0.273</td>
<td>0.294</td>
<td>0.261</td>
<td>0.675</td>
<td></td>
</tr>
<tr>
<td>D1</td>
<td>-0.067</td>
<td>-0.003</td>
<td>-0.035</td>
<td>-0.003</td>
<td>-0.031</td>
<td>0.231</td>
</tr>
<tr>
<td>D2</td>
<td>-0.016</td>
<td>-0.065</td>
<td>-0.059</td>
<td>-0.041</td>
<td>-0.043</td>
<td>-0.087</td>
</tr>
<tr>
<td>D3</td>
<td>0.062</td>
<td>0.029</td>
<td>0.034</td>
<td>0.034</td>
<td>0.076</td>
<td>-0.077</td>
</tr>
</tbody>
</table>

Covariance Matrix

<table>
<thead>
<tr>
<th></th>
<th>D2</th>
<th>D3</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2</td>
<td>0.184</td>
<td></td>
</tr>
<tr>
<td>D3</td>
<td>-0.052</td>
<td>0.170</td>
</tr>
</tbody>
</table>

Total Variance = 3.297 Generalized Variance = 0.101815D-04
Largest Eigenvalue = 1.662 Smallest Eigenvalue = 0.045
Condition Number = 6.060

EMPOWERMENT MODEL

Number of Iterations = 9

LISREL Estimates (Maximum Likelihood)

Measurement Equations

EES1 = 1.000*EMP, Errorvar.= 0.457 , R² = 0.342
Standerr (0.0561)
Z-values 8.148
P-values 0.000

EES2 = 1.289*EMP, Errorvar.= 0.0749 , R² = 0.840
Standerr (0.0195)
Z-values 7.776
P-values 0.000

EES3 = 1.138*EMP, Errorvar.= 0.131 , R² = 0.702
Standerr (0.0209)
Z-values 7.487
P-values 0.000

EES4 = 1.042*EMP, Errorvar.= 0.178 , R² = 0.591
Standerr (0.0246)
Z-values 7.114
P-values 0.000

EES5 = 0.952*EMP, Errorvar.= 0.460 , R² = 0.319
Standerr (0.0561)
Structural Equations

\[ EMP = -0.235 \times D_1 - 0.379 \times D_2 - 0.0435 \times D_3, \text{ Errorvar.}= 0.217, R^2 = 0.0874 \]

Standerr (0.118) (0.131) (0.126) (0.0577)
Z-values -1.996 -2.892 -0.344 3.751
P-values 0.046 0.004 0.731 0.000

Covariance Matrix of Independent Variables

\[
\begin{array}{ccc}
D_1 & D_2 & D_3 \\
D_1 & 0.231 & \text{(0.027)} & 8.631 \\
D_2 & -0.087 & 0.184 & \text{(0.018) (0.021)} & -4.746 & 8.631 \\
D_3 & -0.077 & -0.052 & 0.170 & \text{(0.017) (0.015) (0.020)} & -4.421 & -3.443 & 8.631
\end{array}
\]

Covariance Matrix of Latent Variables

\[
\begin{array}{cccc}
EMP & D_1 & D_2 & D_3 \\
EMP & 0.237 & & & \\
D_1 & -0.018 & 0.231 & & \\
D_2 & -0.047 & -0.087 & 0.184 & \\
D_3 & 0.030 & -0.077 & -0.052 & 0.170
\end{array}
\]

Log-likelihood Values

<table>
<thead>
<tr>
<th></th>
<th>Estimated Model</th>
<th>Saturated Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of free parameters (t)</td>
<td>19</td>
<td>36</td>
</tr>
<tr>
<td>(-2\ln(L))</td>
<td>-482.661</td>
<td>-520.745</td>
</tr>
<tr>
<td>AIC (Akaike, 1974)*</td>
<td>-444.661</td>
<td>-448.745</td>
</tr>
<tr>
<td>BIC (Schwarz, 1978)*</td>
<td>-387.586</td>
<td>-340.603</td>
</tr>
</tbody>
</table>

* LISREL uses AIC= \(2t - 2\ln(L)\) and BIC = \(t\ln(N) - 2\ln(L)\)

Goodness-of-Fit Statistics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees of Freedom for (C1)-(C2)</td>
<td>17</td>
</tr>
<tr>
<td>Maximum Likelihood Ratio Chi-Square (C1)</td>
<td>38.084 (P = 0.0024)</td>
</tr>
<tr>
<td>Browne's (1984) ADF Chi-Square (C2_NT)</td>
<td>34.990 (P = 0.0062)</td>
</tr>
<tr>
<td>Estimated Non-centrality Parameter (NCP)</td>
<td>21.084</td>
</tr>
<tr>
<td>90 Percent Confidence Interval for NCP</td>
<td>(6.921 ; 42.964)</td>
</tr>
<tr>
<td>Minimum Fit Function Value</td>
<td>0.256</td>
</tr>
<tr>
<td>Population Discrepancy Function Value (F0)</td>
<td>0.142</td>
</tr>
<tr>
<td>90 Percent Confidence Interval for F0</td>
<td>(0.0464 ; 0.288)</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA)</td>
<td>0.0912</td>
</tr>
<tr>
<td>90 Percent Confidence Interval for RMSEA</td>
<td>(0.0523 ; 0.130)</td>
</tr>
<tr>
<td>P-Value for Test of Close Fit (RMSEA &lt; 0.05)</td>
<td>0.0421</td>
</tr>
<tr>
<td>Expected Cross-Validation Index (ECVI)</td>
<td>0.511</td>
</tr>
<tr>
<td>90 Percent Confidence Interval for ECVI</td>
<td>(0.416 ; 0.657)</td>
</tr>
<tr>
<td>ECVI for Saturated Model</td>
<td>0.483</td>
</tr>
<tr>
<td>ECVI for Independence Model</td>
<td>3.501</td>
</tr>
<tr>
<td>Chi-Square for Independence Model (28 df)</td>
<td>505.660</td>
</tr>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>0.925</td>
</tr>
<tr>
<td>Non-Normed Fit Index (NNFI)</td>
<td>0.927</td>
</tr>
<tr>
<td>Parsimony Normed Fit Index (PNFI)</td>
<td>0.561</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>0.956</td>
</tr>
<tr>
<td>Incremental Fit Index (IFI)</td>
<td>0.957</td>
</tr>
<tr>
<td>Relative Fit Index (RFI)</td>
<td>0.876</td>
</tr>
<tr>
<td>Critical N (CN)</td>
<td>130.839</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMR)</td>
<td>0.0224</td>
</tr>
<tr>
<td>Standardized RMR</td>
<td>0.0498</td>
</tr>
<tr>
<td>Goodness of Fit Index (GFI)</td>
<td>0.945</td>
</tr>
<tr>
<td>Adjusted Goodness of Fit Index (AGFI)</td>
<td>0.883</td>
</tr>
<tr>
<td>Parsimony Goodness of Fit Index (PGFI)</td>
<td>0.446</td>
</tr>
</tbody>
</table>